MEDICAL RECORD

A National Review of Medicine and Surgery, Established 1843

VOL. 155, No. 1 WEDNESDAY, JANUARY 7, 1942 WHOLE No. 2704

One Man

Every human being in this world is affected by the present war. At no time in history have military operations been on such a large scale. At no time in history have the lives of civilians been disregarded as they are today. Every living human feels tension, unhappiness, and suffering.

History has recorded great warlords, such as Caesar, Hannibal, Napoleon—but this war, in addition to having essentially new weapons and new tactics, differs fundamentally from others: Hitler had to conquer and subjugate brutally his own people before he could build his machine and wage a war of conquest, first on the defenceless nations around him, and finally against the much better prepared Russia. His keynote has been ruthlessness and barbarism within his own borders, and finally wherever his machine could strike. He has also subjugated his white and yellow minions. They too are dependent upon him; he would strike against them ruthlessly had he the opportunity. *One man* has done all this.

We are now completely and officially in the war alongside the other countries who are fighting for their freedom and existence. The Allies were caught unprepared and offguard. We in this country are fighting a battle of the same importance as the one we fought in 1776, against a more ruthless and treacherous group of foes who are all under the leadership of *one man*.

Our country is more united today than at any other time since it was established. Our morale is excellent, and there will be no panic as there was in France. We are stronger each day. We have for Allies the Chinese, who have shown the most courageous attitude of any nation in world history and have fought on though defeat seemed inevitable; the Russians, who have shown a remarkable courage and tenacity when all thought they were doomed to sudden and quick defeat; the British, who under the able and courageous leadership of Churchill are fighting on many farflung fronts and have stood a terrific beating in their homeland with a courage greater than that shown by most armies in battle; the peoples of most of the subjugated countries, who are carrying on their governments in exile; the united republics of the Americas; and every liberty-loving person.

We may have to equal some of the sacrifices that have been made by the Chinese, the Russians, and the British. Whatever we may be called upon to meet, we must do with courage and with good cheer. Our foes are at the apex of their strength, and each passing day will find them weaker. We have just begun to gather our forces, and each passing day will find us stronger.

New conditions of warfare will enforce new methods of medical care, and in this war—as in all previous wars—the medical profession will be called upon to do its share; and in this crisis—as in all previous crises—physicians and surgeons will do their job without urging. The immediate job of every physician is to help maintain our present splendid morale. There can be no defeatism; we are entering the most important battle that has ever confronted man—the greatest battle of freedom against tyranny. We must—and we will—show the spirit and courage of the men of '76.

GREGORY STRAGNELL

Brain Waves and Selective Service

Since the discovery by Hans Berger, in 1929, that the action potentials given off by the human brain could be measured through the intact skull and scalp, numerous studies have demonstrated the clinical value of the electroencephalogram in the differential diagnosis of the epilepsies and in the localization of neoplasms, scars, and focal destructions of brain tissue. In numerous hospitals and clinics the electroencephalogram has become an accepted method of neurological examination.

H. M. Serota, of the department of neuropsychiatry of the Michael Reese Hospital, in a study in *The Military Surgeon,* discusses the applicability of the electroencephalogram to the large scale recruiting, selection

and classification to be done by our armed forces. He points out that petit mal is diagnosed from its typical wave pattern which is ten times greater than the normal amplitude and has a characteristic frequency of three per second. One is surprised at the frequency with which petit mal goes undiagnosed. One patient had had attacks of "peculiar momentary staring" for three years before a diagnosis was made. The danger of such momentary peculiarity in aerial combat, for example, needs no emphasis. Grand mal, too, is frequently characterized by a typical wave pattern, and the same is true of neoplasms and other space occupying lesions of the brain.

While no characteristic patterns have been found in the major psychoses, pathological deviations in the electroencephalograms taken in certain groups of schizophrenia have led to the discovery of unsuspected organic brain diseases. Hysterical and true epileptic seizures can now be clearly differentiated. Feigned or hysterical blindness may be detected by watching the record for extinction of the alpha rhythm which occurs when light is flashed into the eyes. In the case of actual blindness, no such response appears.

Serota suggests practical application of the electroencephalogram to the problems of the armed forces, particularly to the problems of recruiting faced by the medical officer. Dangerous central nervous system disease, malingering and related conditions are among the problems which can be more readily differentiated as a result of the discoveries made with the electroencephalogram. It is not suggested that the electroencephalogram replace clinical judgment in the neuropsychiatric examination but rather that it be used as an adjunct.

The British 1914-18 War Babies

In Britain, much was said before this war concerning the slackness and the spineless behavior of those born in Britain during the last war. Sir Walter Langdon-Brown, emeritus professor of physics in the University of Cambridge, defends stoutly, in a rousing article in the *London Evening News,* last July, the British war babies of 1914-18. He points out that they have confounded their critics by their deeds in the air, on the sea, and on land.

The most apt of Sir Langdon-Brown's remarks are perhaps, his views as to heredity and environment. As an authority on biology, he argues that there is no more reason why war conditions should in themselves give children a bad start than that we should expect the children of a man who lost a leg in the war to be born minus a limb. Maternal impressions, too, have much less influence than used to be thought, and here enters the most important part of Sir Langdon-Brown's article, that is, the distinction between heredity and environment, or as he puts it, the question of value versus nature. He points out that heredity is determined by the germ plasm, which is transmitted from each generation to the next, and which is elaborately protected against outside influences. This makes for stability, but works equally against both deterioration and improvement of the stock after environment comes in. If it were not so, all efforts at betterment of the race would be wasted. Nevertheless, bad heredity can defeat good surroundings, while good heredity can often assert itself against bad surroundings. His point is that the ill effects of early surroundings have proved to be superficial in these British war babies and the goodness of the heredity stock has asserted itself.

It seems then that Sir Walter Langdon-Brown is inclined to lean towards heredity as the factor in the making of the character of an individual, rather than environment. Both play their part. Moreover, in his opinion, the troubled times of the past few years have helped greatly to mould and stiffen the character of the British young. It has created in them independence of thought, self-reliance and, above all, the ability to seize the initiative and at the same time, to develop an extraordinary capacity for unified action. In short, the young men of Britain are willing to sacrifice themselves in the hope that thereby a better world will come to pass, and that their sacrifice will benefit future generations.

Soldier's Heart

During the first World War, soldier's heart was an outstanding problem. It ranked third in the list of reasons for discharge from the British army and navy. According to Lewis's study on the effort syndrome, in the British forces there were 37,000 cases of disabling heart disease, as compared to 139,000 of wounds and injuries. P. D. White, of Boston, in a survey of the past and present aspects of cardiac disease in the army (*War Medicine*) states that his experience with the American Expeditionary Force in France in 1917 and 1918 was similar except that he, in comparison, found fewer organic lesions.

After the first World War, the majority of veterans disabled by socalled heart disease were actually suffering from neurocirculatory asthenia which at that time was "erroneously and harmfully labeled myocarditis". Of one hundred ex-soldiers sent to one of the Public Health Service hospitals, with a diagnosis of valvular heart disease or myocarditis, forty-five had neurocirculatory asthenia, twenty-two had miscellaneous conditions other than heart disease, and most of the others suffered from aortic and mitral valvular disease.

During the last two decades, according to White, considerable advances have been made, such as rejection of new recruits having serious cardiac lesions, early recognition of disabling heart disease in enlisted men,

and adequate measures for the protection of soldiers from certain causes of heart disorders, particularly syphilis and rheumatism. In 1937, the rate of discharge for disability of soldiers because of neurocirculatory asthenia, was double that of coronary disease and a little greater than the rate for arteriosclerosis other than that affecting the coronary vessels.

Of practical importance are the recommendations recently made in England by Lord Horder and an advisory committee. They give a revised exercise-tolerance test. Rarely is there any lesion of the heart found in soldier's heart. The condition has also been known as "irritable heart". Its present name, effort syndrome, was coined by Sir Thomas Lewis. He described it as a condition in which the characteristic symptoms are nervousness, a feeling of exhaustion, left chest discomfort, palpitation, giddiness and dyspnea on exertion. Most men who break down during training or active service, according to Lord Horder, are neuropaths. In a few instances, the condition may be ascribed to chronic or temporary toxemia.

There are definite diseases of the heart or arteries which will probably disqualify a man for active military service. Lord Horder's committee would assign to the lowest grade men whose hearts show signs of enlargement, aortic or mitral disease, or congenital malformation, even though the lesion is well compensated and the man gives a fair response to the exercise-tolerance test. Paroxysmal tachycardia and high (diastolic) blood pressure also call for low grading. If a man has a diastolic reading between 90 and 100, he should not be placed higher than grade 3. If the reading is over 100, he should be placed in the lowest grade.

A systolic murmur heard at the apex is not to be accepted alone as evidence of structural heart disease; but when it is present, a high exercise-tolerance should be required and mitral and aortic disease carefully excluded. A systolic murmur at the base is common even in health.

The Psychology of Fear

The medicopsychological conception of fear appears to have changed, to some extent, since the last war. Then, the brave soldier was regarded as fearless, but owing perhaps to the size of the conscript armies of the last war, the problem of fear was forced on the army doctor. Now, fear and sorrow reactions seem even at their onset to be more complicated and derivative than was previously held. The truth is that, although the obscurities which hinder the study of psychology are being unravelled, there is still very much to learn, and the most essential points are yet not fully understood.

In a recent Honyman-Gillespie lecture in Edinburgh, Prof. D. K. Henderson endeavored to clarify some of the moot features of fear, which he said was among the most widespread and unpleasant of human emotions. A result of fear might be a disturbance of the autonomic nervous system, leading to disorders which could not be cured unless the underlying anxiety was removed. Professor Henderson believed that fear was more social than sexual in its origin in both children and adults, and hinged on the separation from the mother. Fear and loneliness went hand in hand.

Fear states, initiated in childhood, persisted into adult life, usually in highly sensitive artistic people who disliked loneliness and might come to use alcohol as a means for maintaining a uniform state. This state of mind brought about a continuous nervous conflict more fatiguing than the heaviest physical exertion, demonstrated externally by asthenia, lack of concentration and loss of spontaneousness, together with physical features which might be referred, for example, to the heart or the digestive system. The mind acts on the body and the body reacts on the mind and an anxiety or fear neurosis will produce many bodily complaints. Doctors should try to obtain the psychological background of their patients, especially those suffering from a psychoneurosis. It was necessary to know the background against which the symptoms had developed before modification or cure could be obtained, and in the long run, time spent in this elucidation was well spent.

The psychic needs of the child, and it may be added the adult, must be studied as closely as his physical needs, but it was surprising how little attention was paid to this important phase of an important subject. Professor Henderson holds that the subjective aspects of illnesses of all kinds are inadequately studied.

Longevity

A favorable home environment is much more important than biological heredity in promoting the length of life, said Dr. Louis I. Dublin, vice-president of the Metropolitan Life Insurance Company, at a meeting of the Association of Life Insurance Medical Directors in America.

There is, of course, some truth in the old saying that the best way to live long is to pick long-lived ancestors, but a study of the mortality record of 118,000 insured men, for the four decades from 1899 to 1939, carried out by Dublin and H. H. Marks, give support to entirely new conclusions. The statisticians found that the most important single factor in an individual's life expectancy was whether one, both or neither of his parents was living at the time he applied for insurance. The ages ultimately attained by the parents which would be the deciding factor if the inheritance were a matter of biological quality, were found to be statistically of secondary importance. Among men whose parents were both living at the time the insurance was issued, the mortality ratio was lowest—only 88.4 per-

cent. The highest mortality—110.8 percent—was recorded among those whose parents were both dead at the time insurance was issued. Intermediate was the group in which one parent was living, the ratio to the expected mortality being 97.7 percent.

The home environment must be the crucial factor, Dublin and Marks explained. The premature death of either parent often results in the breaking up of the home, with its consequent lack of care of offspring. This applies whether it is the father or mother who dies. The situation is worse when children are left complete orphans at a relatively early age. The children in all broken families where either or both parents have died are, on the whole, much more poorly housed, clothed and fed than other children, and more of them are compelled to go to work at an early age. Consequently, more engage in unskilled labor and other poorly paid work than the children in normal families. On the other hand, the statisticians pointed out, there may be strong beneficial influences from survivorship of parents on the longevity of offspring even at comparatively late ages of the offspring. For example, parents may help their offspring financially and in other ways.

These are entirely new statistical figures and surprising conclusions—surprising, it is true, more to biologically minded scientists than to social workers and hygienists.

A Plan for Cancer Control

It is quite generally acknowledged that control of cancer is inadequate, that is, its increase is more progressive, in spite of the progress made in treatment and the accurate means for diagnosis now available. Dr. Robert McWhirter reviewed the cancer situation in the Honyman-Gillespie lecture which he gave in Edinburgh on May 8th. He has had exceptionally favorable opportunities for looking into the matter on a wide scale, and is a cancer expert if the term is permissible. His views may be accepted as authoritative from the viewpoint of its control. He said, in part, that failure to reduce the death rate appeared to be due largely to the fact that patients did not receive treatment sufficiently early, that treatment was not always adequate, and that insufficient use was made of past experience in order to advance methods more rapidly. To be able to overcome the existing difficulties, he believed that all diagnosis, treatment and after care should be centralized, and one of the main functions of the central controlling body should be to secure early treatment. For instance, adequate early treatment of cancer of the breast promised to give a five year survival rate in about ninety percent of cases, but the results progressively deteriorated with the delay. To the central body must be referred all cases presenting the slightest symptoms suggesting malignant disease. An adequate staff of trained specialists would be required to make a differential diagnosis which often might be extremely difficult. Increased knowledge of the earliest stages would thus be obtained and would be passed on in undergraduate and postgraduate teaching. The center would also be responsible for securing adequate treatment.

The point of the lecture which is most important is that means for detecting cancer in as early a stage as possible must be devised and become a practical policy. If the scheme suggested by him will achieve this object, and meets with the approbation of those who from experience are entitled to speak with authority, then it should be brought into being as soon as the world has settled down to more or less normal conditions. There is no doubt that cancer, as a rule, is not diagnosed early enough to make curative or even remedial treatment effective, and any plan which appears likely to abolish or remedy this state of affairs will be welcomed by the public and medical profession.

Road Accidents to Children in Britain

In Britain since the beginning of the war, road accidents have increased at an alarming rate. It is a problem which the war has aggravated greatly. Children in Britain are now being killed at the rate of more than three a day and in some recent months this rate has risen actually to four and more. In the early part of this year mortality from road accidents among children had increased by more than fifty percent, compared with the corresponding period of 1940. In many ways traffic has decreased and the increased death rate from accidents cannot be owing to the black-out for the very good reason that they are not generally using the roads at that time.

As was the case before the war, the most numerous victims are between the ages of four and eight, and sudden dashes into the road the most frequent cause. It seems essentially the problem of the young child and safety training in school is no safeguard. The child is either too young to go to school or not old enough or too careless to profit by instruction. Of course, impulsiveness is a natural characteristic of childhood and more adequate protection is required.

The whole responsibility must not be placed on the child. Drivers are more careless than formerly and there is a lust for speed. Also there seems to have come over the inhabitants a fatalistic mood regarding street and road accidents. Another reason which, if not ignored, is glossed over, is that when there is a lull in air raids, children flock back to big towns. Their parents are advised strongly not to permit them to leave the country, but in too many instances this advice is unheeded. Thus many meet their deaths or are maimed. They also add to the labors and anxieties of town authorities and are a source of trouble generally.

Papers and Addresses

THE MODIFICATION OF FACIAL CHARACTERISTICS THROUGH REMODELLING OF THE NOSE

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It may seem far-fetched to presume that this problem has enough importance to make it worthy of discussion. As a matter of fact this is the most important problem in modern corrective surgery with which every plastic surgeon is faced every day, and with which every practitioner may be faced when advising his patients to visit a plastic surgeon.

The problem ordinarily arises as a simple question asked by the patients, "Will the operation affect the expression of my face?" Many a time it embodies a wish, such as: "I don't like my facial characteristics, I want to have them changed"; or as a restriction: "I don't want to lose my personality by the operation!" And since we have to answer these questions, promise the patients advantageous changes, or assure them that there is no reason to be frightened, we have to be thoroughly acquainted with the problems involved.

It is an interesting fact that few patients, when speaking about "personality" or "facial characteristics", can explain what they really mean. Those who want to have their facial characteristics changed just feel that there is something wrong with their faces, and those who want to save their "personality" from the surgeon's knife, confuse facial characteristics with recognizability, or are afraid that the operation will result in a uniformly pulled up nose. We must not be surprised by this faulty usage of expressions. It is human nature to pick up slogans and use them without knowing their meaning.

To avoid misunderstanding and to place the discussion on a precise basis, it is necessary to define the concept of facial characteristics.

The picture of the face is built up of many features. Although every single feature affects our visual sense separately, our brain reacts at the first sight of a face with an emotional generalization. We are pleased when all of the single features harmonize in shape and size, and judge such a face as beautiful. On the other hand, lack of harmony of the single features arouses displeasure in us and we judge such a face as ugly. "Beauty" and "ugliness" in this case are only general judgments produced by the reaction to the sight of the face in our *emotional* centers. But these are *not* facial characteristics. When the stimulus acts further it will also affect the *association* centers of the brain. Memories are thereby awakened and associated with the new sensation. This process results in a comparative, descriptive estimation which can be expressed by a single adjective. This adjective is, in *my* terminology, the "facial characteristic". It is not a judgment upon beauty or ugliness, it is just a statement specifying the character of the visualized face.

This definition becomes more understandable through an example. Picture a face. It is of medium size, and so are its parts. There is nothing outstanding on it, the features are harmonious. The nose is a little bent, its ridge showing a definite angle, the lips are thin, the chin well developed and chiseled, the eyebrows straight and close together. Looking at such a face we immediately judge it as "masculine". By this judgment we have defined its place among the other faces, but we did not estimate it from the point of beauty. The adjective "masculine" expresses the facial characteristics. It is another question whether this characteristic is desirable or not, and whether the face characterized as "masculine" is beautiful or ugly. Beauty depends upon harmony, and, as I said before, lack of harmony means ugliness. In our example, the features themselves are harmonious. If the face, this compound of features, harmonizes also with all the other details, and it belongs, for instance, to a well built male, the face will please us and we will judge it as beautiful. But the same face belonging to a feminine body is ugly, because there is a disharmony between face and body.

Since every feature contributes its share to the build-up of facial characteristics, the change of any one feature may alter it. We are not far from the truth when we state that a *definite change on any part of the face results in a definite modification in characteristics of the face as a whole.* Again, an example might be useful.

Take those relatively unimportant features, the eyebrows. Moderately curved, thin eyebrows make the face look *mild.* Eyebrows of the same shape but thicker and grown close together give a *masculine* expression to the face. Thin, semicircular eybrows, the highest point of which lies far from the eyes, makes the expression *amazed.* When they are straight and running horizontally, the face gets a *strict* expression. Eyebrows which run steeply upwards and then abruptly downwards ending with a thickened part, lend the face a *diabolic* appearance. And so on. When the eyebrows, these simple, flat lines, can influence the facial characteristics in such manifold ways, we can imagine how important in the build-up of the facial characteristics the other, larger, more prominent and more variable features are.

Since the nose is the most protruding part of the face and shows the greatest variety, it is the most important factor in defining facial characteristics. Fortunately, the nose is also that part of the face the remodelling of which is the most practicable.

The importance of the nose in facial build-up and its easy changeability explain the fact that the very first subject of corrective operations was the nose, and that corrective nasal surgery has been, and still is, the most

important surgical treatment in the correction of an ugly appearance.

The first experiments in this field of surgery are much older than is generally supposed. As long as one hundred years ago, Dieffenbach, the great master of surgery, had already performed the first operation on a healthy nose merely for cosmetic reasons. The nose on which he operated was a very crooked and slanted one. Performing the correction endonasally, he chiseled through the frontal processes of the maxilla through incisions cut in the lateral walls of the vestibula nasi and pushed the nose in toto to the middle of the face. However successful this operation was, it remained—due to lack of effective methods for anesthesia—without imitation; and the next fifty years show only a very few and isolated experiments along this line. Thus, the American John Roe corrected a "pug-nose" in 1887; Robert Weir, also an American, operated on a "very prominent" nose in 1892. In 1898 Jaques Joseph of Berlin, Germany, lectured about a case of general reduction of an "overdeveloped nose"; in 1899 Goodale described the correction of an "exaggerated Roman nose". Although all of these experiments were independent of each other, their aim was common, that is, to *eliminate a repulsive disfigurement of the nose.* This aim characterizes the first period in the history of corrective nasal surgery.

From 1902 to 1910 Jaques Joseph, in several papers, discussed the remodelling of the different parts of the nose; and in 1912 he published the first summarizing monograph about the correction of all nasal deformities. This monograph, also published as a chapter in a large manual of rhinolaryngology, had been the starting point of the second period in the history of corrective nasal surgery. In this second period the aim of the surgical treatment became the *beautifying of the nose* by eliminating its deformities and reducing its size. Already at that time Joseph's genius recognized also the favorable influence of these corrective nasal operations on the psychical set-up of the persons operated upon, a possibility which later became an indication for surgical treatment. Although Joseph's publications and operative results were known in professional circles, and even the general public was fully aware of the possibilities of his methods, and up until 1926-1927, when I had the opportunity to study his methods with him, he had performed more than five thousand corrective nasal operations, it was a very long time before ugliness and deformity of the nose was generally acknowledged as a surgical condition, and even longer before Joseph's methods were generally used. In order to prove this statement, I wish to state that in 1927, when I studied plastic surgery in Paris, Dufourmentel, one of the best known French plastic surgeons, performed all his nasal corrections through an incision on the ridge of the nose, thus using a method which Joseph had already abandoned in 1904.

This period ended when Joseph and his followers realized that beautifying the nose alone could not be the final aim in corrective nasal surgery. Artistic points of view came into the foreground, and *beautifying the whole face,* instead of the nose only, became the plastic surgeon's aim when planning the new shape of the nose.

The expression, "planning the new shape of the nose", however strange it may sound, must be taken literally. Every plastic surgeon is, or at least ought to be, also an artist. First, he must have the ability to draw or model a portrait of his patient; then enough imagination to plan that one and only new shape of the nose which will harmonize with all the other features; and lastly, the dexterity to perform the remodelling of the nose exactly as planned. No matter what means are used for planning, whether modelling or sketching, such planning is essential for good results and saves both surgeon and patients from disappointment.

I, myself, prefer sketching to modelling, because it takes less time, and also because such a sketch is more useful as a lead when performing the operation. I draw an almost lifesize portrait of the patient; then I copy this sketch exactly, leaving out only the contour of the nose. Into this second sketch of the face minus the nose, I try to draw a new nose, one which harmonizes with the other features and the modelling of which seems to be feasible; i.e., the anatomical build-up of the actual nose allows the desired remodelling. In this way I get two sketches; one showing the nose before the operation, the other one showing it as it will be after the operation. Placing the latter on top of the former one, looking at them transilluminated, we can see the difference in the contour of the two noses. While performing the operation, this transilluminated picture shows us how much and from where to remove, to give the planned shape to the nose.

In this period the further development of Joseph's original methods took place, which, hand in hand with the preoperative planning, enabled us not only to meet the demands of the public, but also to furnish great security as to the good results. This increased security acted in two ways on the public. First, it increased the patients' confidence in the plastic surgeons, and second, it also increased their demands. The public, at first quite content with simply getting rid of repulsive disfigurements, and later with beautifying of the nose, could no longer be satisfied even with beautifying the face. It regarded the surgeons as omnipotent, and expected them to give help in all of its troubles. The patients started to relate all their difficulties, disappointments in business, in social life, in love, in marriage, and trusted the surgeons to find out the causes of their lack of success. And due to their artistic sense, the surgeons met these new demands when they recognized that the cause of the patients' troubles often lay in the unfavorable characteristics of their face. Striving to change such unfavorable facial characteristics into favorable ones, characterized the fourth and latest period of the corrective surgery of the nose.

Sometimes the patients themselves give the clue to the diagnosis, just as in general practice when patients often come to their physician with a correct diagnosis of their illness. I recall the first case which called my attention to these new problems. The patient was a salesman in his thirties. He complained that he had difficulties because the customers regarded him *arrogant,* despite his polite manners. "It must be something in my face", he complained, "that arouses this reaction". And he was right. His audaciously tilted nose and very long pallia gave his face an arrogant expression. Since then I have heard many such complaints, especially from women, who from their most often consulted friend, the mirror, are able to discriminate

and specify their faults correctly. "Since my face is growing *old*", one says, "my husband does not care for me", or, "In spite of the best recommendations, I cannot get a job because of my *Jewish* appearance", or, "*Sad* faces are undesired on the stage, therefore, I cannot get a chance to show my talent as an actress", says another, and so on.

There are hundreds of ways that patients express their complaints about bad luck and bad experiences. These expressions: "looking old", "Jewish", "sad", "masculine", "arrogant", "strict", "stupid", "lovely", "gay", etc., are not mere adjectives, but when referring to the face, they express our descriptive specifications, and thus they are facial characteristics.

It is very exciting to delve into why and how facial characteristics develop, but it could not be condensed in the framework of this article. We have to be satisfied with the statement that there are in general three forces which play a rôle in this process: racial and family heredity, psychic and somatic influences (which to some extent cannot be separated from each other and from the former group), and influences of the environment. Although the results of their collaboration may affect just one of the features, in most cases several features have been affected, and thus certain facial characteristics must be ascribed to several features. But there is also another fact, namely, that several causes may affect a single feature, even simultaneously, and thus *one* of the face-building factors may be the bearer of different facial characteristics. An example of that was the rôle of the eyebrows previously described.

By interaction of the different factors influencing the features, and through them the facial characteristics, the situation becomes yet more involved. Called upon to help, we first have to define the unfavorable facial characteristics of the patient, and the features which are the cause. Then we have to pick out that feature which has the greatest rôle and the remodelling of which is the most practicable. Such a selection leads to the surgical diagnosis. In most cases, we will find the nose as the most important factor in spoiling a face. As a matter of fact, I really cannot think of any hereditary, psychic, somatic, or environmental factor in influencing the facial characteristics which would not affect the shape of the nose too.

Although the theme of this article is the relation between facial characteristics and the nose, I cannot discuss this subject at length either. But I wish to give some examples of how the shape of the nose determines facial characteristics. First, I must repeat that facial characteristics are judgments originated in our association center, and built up from a visualized picture and memories awakened by it. Speaking less scientifically, if one judges a face as a sorrowful one, it means that it looks like the faces which one remembers as those of sorrowful people. A stubborn face gives the same impression as the faces of stubborn people; and so on.

But since we are governed not only by our own experiences, but also by the judgment of other people, even by ancient generalizations, prejudices and misinterpretations, these specifications are not always correct. But no matter whether right or faulty, if such a judgment or generalization expresses a general opinion, and this opinion about the facial characteristics of a person is an undesirable one, it may be an indication for surgical treatment.

Such a false belief can be observed in connection with the exaggerated pug-noses, or more correctly with saddlenoses. At the time when tertiary syphilis and hereditary syphilis occurred more frequently than today, socalled syphilitic noses were also very frequent. These syphilitic noses are abnormally short, exaggeratedly tilted, the nostrils facing almost completely forward, and the ridge showing a very deep concavity. They are really not only ugly in themselves, but also abhorrently repulsive because of the association with the illness causing it. Regardless of the fact that such shape of a nose may have had its origin in suppurative processes caused, for instance, by staphylococci, or may even have been the consequence of an accident, the public still feels averse toward people having such noses, and it extends this feeling toward moderate saddlenoses, often even pug-noses having no pathological origin at all.

Another such facial characteristic which became undesirable because of a misbelief, is that of the "Jewish face". In reality there is no such thing as Jewish facial characteristics. There is not even such a unit as the Jewish race. Such a belief can be attributed to misinterpreted observations. Jews belong to many different races. There are Mediterranean, Alpine, Nordic, even Semitic Jews. What we now call Jewish characteristics are in reality those of the Mediterranean race. But the population of the Northern European countries belonging to the Nordic and Alpine races became acquainted with the Mediterranean race through exiled Spanish Jews, and regarded their curly hair, dark complexion, and long, bent noses as Jewish characteristics. Their belief, despite its falseness, became a generalization, was passed down through the ages, and even now is accepted as truth. Since a socalled Jewish face is a definite disadvantage in our age, the wish to get rid of it brings increasing numbers of patients to us. As a matter of fact, I myself have often operated upon patients of non-Jewish extraction, in order to eliminate the "semitic" shape of their noses.

Prize-fighters, with few exceptions, have broken, flattened or crooked noses. The association between such noses and prize-fighters has become so deeply rooted in us we feel that a man with a crooked, broken nose is rough, even cruel, and therefore such a nose very often becomes an indication for surgical treatment.

It is interesting to note the influence of the nose on the appearance of the face as regards age. In general, long noses cause the face to look older. In reality, the important factor is not the length of the nose, but rather the distance between the tip of the nose and the chin. With aging, the nose-to-chin distance is constantly decreasing. Its decrease is due to several factors. One of them is that the nose is actually growing longer while aging; another one—at least as important as the former—is the shrinkage of the facial bones which progresses rapidly after loss of the teeth. No matter how young one may be, when the distance between the chin and nose is small, the face looks much older than its age. Artists made use of this fact many hundreds of years ago when characterizing old faces by hanging noses and upward tilted chins; and because of toothlessness and underdeveloped jaws, even

newborn children often have old looking faces. And this fact explains why shortening the nose is our most effective measure in making a face younger looking.

"He goes around with a long face" is a well known idiom. Other languages express the thought of being sad, by referring the "long" adjective to the nose. All of these idioms are correct and originate from the observation that when people are sad the nose and the whole face becomes long. This phenomenon is due to the fact that sadness causes the tonicity of the facial muscles to decrease, causing all the features to sag. Consideration of this observation brought forth the belief that elongated faces with long noses were sad. To make such a face gay looking by remodelling the nose, is a very grateful task for plastic surgeons.

The possibilities described above do not exhaust the subject of modifying the facial characteristics by remodelling the nose. They are just a few examples of hundreds of possibilities, which I have discussed merely to direct attention to the many problems which characterize corrective surgery of the nose today, and how they can be solved. I hope, however, that this lack of completeness will not interfere with an understanding of the statements made in this article, which can be summarized as follows:

Summary

"Every change in the shape of the nose modifies the characteristics of the face. Such a modification is not a failure of the operation, but in reality the only reason we undertake such a drastic measure. Of course, this modification must eliminate only disharmonious features; it must modify the facial characteristics only advantageously, and must not give the face a strange, comic, or unnatural expression, as we so often see in cases of nose correction when performed without conscientious planning."

This summary is also our answer to our patients' questions, wishes, and restrictions, referring to the changes in their facial characteristics in connection with a planned corrective nasal operation.

133 EAST FIFTY-EIGHTH STREET

THE EARLY RECOGNITION OF GLAUCOMA

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It has been proven statistically that glaucoma is one of the most important causes of blindness in our population. Very early recognition and proper intensive therapy will cut down the severity and intensity of this dreaded disease tremendously.

It is rather unfortunate that glaucoma, particularly in the chronic variety, develops slowly and painlessly, so that patients often do not appear at the office of the ophthalmologist until the disease is well advanced. Any pain or distress in the eye, disturbance of vision, the necessity for constant changing of glasses, halos around lights, a hard eye, headaches, particularly in a patient over thirty-five with an hereditary history of glaucoma, requires systematic examination with the ophthalmoscope, the tonometer and particularly the perimeter for fields.

Glaucoma means any eye condition which is associated with an increase of intraocular tension causing damage to the visual apparatus. The amount of intraocular tension which the eye tolerates is very variable. However, arbitrarily, a tension of approximately above 28 or 30 as measured by the Schiotz tonometer is considered above normal, while anything between 12 and 28 may be considered about normal, although we know that there are some eyes which may tolerate a tension as high as 35 mm. without evidence of glaucoma, while there are other eyes which show glaucomatous changes where the tension does not rise above 25. Intraocular tension is very often 3 to 5 mm. higher in the early mornings than in the afternoon so that a few tonometric readings may be necessary at different times of the day to detect the disease.

The aqueous fluid may be considered either a secretion of the ciliary process which passes from the posterior chamber of the eye into the anterior chamber through the pupil, and disappears in a continuous flow into the spaces of Fontana and Schlemm's canal, into the anterior ciliar veins. On the other hand, the aqueous may be considered a dialysate from the blood serum passing through the capillary lobes of the ciliary processes and Schlemm's canal allows the escape of minute quantities of aqueous when the intraocular tension is raised either by accommodation or by the pressure of the extraocular muscles. Regardless of the theory of the formation and circulation of the aqueous, blocking of the anterior angle of the eye either by inflammatory processes or by swelling of the lens prevents the escape of the fluid into the canal of Schlemm and causes an increase in intraocular tension.

Acute Glaucoma

Glaucoma is usually divided into primary and secondary forms and the primary into acute and chronic types. In acute glaucoma the attack usually comes suddenly without previous indications of the presence of the disease. The suggestive signs are often pain which is throbbing and severe, radiating over the entire head, so that the eye may not even be suspected. Examination reveals circumcorneal injection, a steamy cornea due to the edematous epithelium, reduction of vision sometimes to 20/70, and within twenty-four hours often to hand movements. The fundus may not be visible through the steamy cornea. If the fundus is visible, the only fundus findings may be some hyperemia of the disc and engorgement of the vessels. Cupping in primary glaucoma usually does not occur and is only found later. This condition is usually unilateral but sometimes both eyes are involved. The eye is hard on palpation and the tonometer often registers above 50. Acute glaucoma must be differentiated from iritis and acute conjunctivitis. In glaucoma, sudden pain, loss of vision, a large fixed pupil, and increase of intraocular tension are the diagnostic factors.

There are certain predisposing causes of acute pri-

mary glaucoma. These are a shallow anterior chamber, a small globe and hyperopia (glaucoma rarely occurs in myopia). Heredity is often a factor, and glaucoma is rarely seen below the age of thirty-five. It also occurs in individuals who are neurotic or easily excited so that an acute emotional crisis may precipitate an attack. It is important to note that the use of a mydriatic such as atropine or homatropine may sometimes start an attack, but this occurs only in patients predisposed to glaucoma. Thus it is important to avoid using these mydriatics in dilating the pupils in patients above thirty-five, but ephedrine sulphate, three percent, or adrenalin may be used with safety.

Chronic Glaucoma

Chronic glaucoma occurs more frequently than acute glaucoma, often in the ratio of five to one, and is usually bilateral. In this condition, the loss of vision may be very gradual and central vision retained until later in the disease. Often the patient is unaware of any visual loss. Pain may be dull, inconspicuous and not severe. Halos around lights may be seen due to the edematous cornea. The disc may not be cupped until the intraocular tension has been increased for a considerable period but, if cupping is present, it is a pathognomonic sign of glaucoma. This cupping of the disc is associated with dipping of the retinal vessels and loss of the vessel reflex at the cup margin. Ordinary physiological cupping which is normal, is usually a funnel shaped depression in the center and only the central portion is pale, while in glaucoma, besides the dipping of the retinal vessels, the whole nerve head is somewhat pale.

The intraocular tension is often increased with daily variations from 35 to 40, although we know that a tension as low as 20 mm. may be sufficient to cause the degenerative changes found in glaucoma. In this condition we usually find a shallow anterior chamber and a moderately dilated pupil which reacts to light somewhat sluggishly. Very early diagnostic signs in chronic glaucoma are the changes in the visual fields which begin to be contracted peripherally. These changes may be detected on a perimeter before there is any increase in intraocular tension or cupping. Bjerrum's scotoma is a characteristic sign and is an enlarged, sickle shaped blind spot.

A quick method of determining the presence of a peripheral field contraction is to have the patient stand facing the examiner. The examiner covers his right eye and the patient covers his left eye. The right eye of the patient is then fixed on the left eye of the examiner and the examiner's left eye fixes the right eye of the patient. Assuming that the examiner has a normal peripheral field of vision an object or even the examiner's finger brought from the extreme periphery inwardly until the patient detects it will be a method of comparing the visual field of the patient and the examiner. Obviously, if the patient sees the object somewhat after it is visible by the examiner, a contracted visual field is to be suspected.

Secondary Glaucoma

There is another type of glaucoma called secondary glaucoma which is usually due to an inflammation or ocular traumatism. This disease is very often seen by the ophthalmologist and may be caused by traumatism, iridocyclitis, postoperatively after a removal of a cataract, intraocular tumors, etc.

When glaucoma, either primary or secondary continues without treatment until all vision is lost we have a condition called absolute glaucoma, where the disc is deeply excavated, the cornea is steamy, the lens often cataractous, intraocular tension very high and pain although not always present may be very severe. In this condition enucleation is often necessary.

Summary

The necessity for early recognition and treatment of glaucoma is very important and may make the difference between useful vision for a lifetime and blindness.

The things to be watched for are a shallow anterior chamber, a small globe, age over thirty-five, a nervous, excitable individual, pain without loss of central vision, nausea, vomiting, circumcorneal injection, dilated pupil not reacting properly to light, steamy cornea with inability to see the fundus, blurred iris, marked cupping of the disc, increased intraocular tension and particularly contraction of the peripheral field of vision.

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55 Eastern Parkway

COMPLICATIONS OR CONCURRENCE

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Textbooks and teachers always stress the occurrence of certain complications in certain diseases, but rarely discuss incidence of coincidental diseases. The appearance of a new symptom during the course of any disease may be part of that disease, the onset of a complication, or the insidious or acute injection of another disease of similar or entirely different etiology.

I recently saw a patient in whom the unusual nature of coincidental diseases, following one another in rapid succession with fatal termination, prompts me to report the case.

On March 20, 1940, a colored female child, aged eight, was seen with the typical lesions of varicella, multiple scattered papules and vesicles on chest, back, abdomen, and extremities. This girl had, six weeks previously, a bilateral myringotomy with cure of a bi-

lateral otitis media, following an acute upper respiratory infection. Now there was an apparently uncomplicated varicella. There was no elevation in temperature, pulse, or respiratory rate. She was comfortable, except for slight pruritus. On the 22nd the lesions had progressed, as expected, to pustules and umbilication with crust formation. At this time, however, she developed a mild sore throat. The temperature remained normal.

On March 25th, the child complained of severe shooting pain in both thighs, which had kept her awake at night. The temperature had risen to 101° F., the pulse was 110, and the respirations 22. Examination revealed an acutely ill patient with umbilicated, crusted skin lesions. The pharynx and tonsils were acutely congested. The lungs were clear throughout. The heart exhibited a tachycardia. There was no paralysis, negative Kernig and Brudzinski, and no nuchal rigidity. There was no joint swelling or pain. The anterior thigh muscles were extremely tender to palpation.

A diagnosis of myositis, probably of rheumatic origin, was made.

On the 27th, the temperature had mounted to 102° F., the pulse was 140, and the respiratory rate was 60. The patient had developed severe precordial pain during the night, and was dyspneic and orthopneic. The lungs were clear, but the heart revealed enlargement to the right and left, with a loud systolic murmur at the apex, transmitted to the base and to the left axilla. The pulmonic second sound was accentuated markedly.

The severe pain in the thighs had subsided under salicylate therapy.

The patient was hospitalized in the contagious disease hospital (varicella lesions still being present), where a diagnosis of varicella and acute rheumatic endocarditis was made.

On the second day at the hospital the patient developed a right lower lobar pneumonia, and she succumbed on the third day.

No postmortem examination was permitted.

The physician must always be alert for coincidence as well as for complication.

1657 PROSPECT PLACE

PARALLEL STRIAE OF THE LUMBAR AREA AS A SIGN OF SPINA BIFIDA OCCULTA

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Urechia (1) reports four cases in which parallel striæ were found and an x ray examination showed a spina bifida occulta. In spina bifida occulta, there are several well known signs visible in the integument which are due to the underlying defect. These are hypertrichosis, subcutaneous lipoma, telangietasis and a dimple of the skin. These are due to the changes in the mesodermal tissue associated with the spina bifida. A lipoma will conceivably cause parallel striæ and this could be present with or without a spina bifida occulta.

Parallel striæ, therefore, may be present with spina bifida occulta, but their presence is not pathognomonic. Ollsnitz (2) reports seventy cases in which these were found, and did not list any in which a spina bifida was found. Of this group, thirty-five cases were due to pathological causes such as recurrent sciatica or lameness, giving a vicious attitude to the trunk. The remaining thirty-five cases were found to be due to occupation attitudes, where prolonged bending of the trunk with stretching or folding of the skin occurred, such as in carpentry, forging and cultivating of the soil.

Many cases have been reported as due to such conditions as hypophyseal tumor (3) and epilepsy (4); cases also due to infectious diseases such as dysentery (5) and cachexia (6). There are several reports of these striæ following pneumonia (7) and tuberculosis (8).

Conclusions

Parallel striæ may be found in cases of spina bifida occulta due to a lipoma in the immediate area or other skin changes, but may be associated also with conditions not due to spina bifida occulta. They are, therefore, a signal for examination, but not at all a certain proof that such a condition exists.

Case Report

Mrs. J. D. C., aged forty-three, white, female, had a very striking group of parallel striæ in the lumbar region. Underneath this area were two lipomas, one on each side of the median line. The Wassermann reaction was four plus, and the x ray of the spine was entirely negative for evidences of spina bifida.

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1252 SIXTH STREET, S.W.

Probably no tuberculous spine ever heals completely and a focus always persists which may become active under unfavorable circumstances. Spinal fusion tends to lessen the probability that such conditions will arise and it also tends to hasten the healing process.—J. A. Key, *Jour. Bone and Joint Surg.*, July, 1940.

Symposium on Neuropsychiatry

MEDICAL RECORD

PUBLISHED TWICE A MONTH BY

THE MEDICAL JOURNAL AND RECORD PUBLISHING CO., INC.

WEDNESDAY, JANUARY 7, 1942

CLINICAL STUDIES OF ENDOCRINE DOSAGE IN THE TREATMENT OF INVOLUTIONAL PSYCHOSES*

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Foreword

It is an accepted truth that the development of the normal human being is dependent upon the normal functioning of his endocrine glands. But the obvious corollary, that abnormally functioning glands are responsible for or, at least, in some way connected with abnormal bodily functions, is still a subject of contention.

Clinical medicine feels the effects of this controversy. For successful clinical medicine still uses the cane of empiricism and must continue doing so until that utopian millenium when all disease etiology has been bottled and labelled and all clinical responses are exact as pre-written. Until that time we must still attempt to adapt therapeutic effect to etiological cause, not overlooking the Hippocratic teaching that the highest aim of medicine is to help the sufferer, regardless of theory. Which is a longer way of stating the short Frontier maxim: Shoot first and look afterward—give the patient what has been proved will help him, and find out why it helped him (if you can) later.

One subject of contention concerns the relationship of female sex hormones to female ailments. We know with certainty that normally the estrogen excretion is insignificant until the time of puberty, and that it decreases in the menopausal period, while the gonadotropic element does not show a corresponding regression. And there is clinical evidence that this distortion of the estrogenic-gonadotropic balance causes peculiar physical and mental symptoms in the menopausal woman which are at least alleviated in some cases by the administration of estrogen preparations. It would appear from this that the replacement of the estrogen hormones is what causes the improvement.

But it doesn't always work out in this manner. Sometimes the estrogen preparations do not produce results which gonadotropic substances do. And, again, preparations of adrenal cortex succeed where the others fail. This is understandable when we recall that the adrenal cortex excretes estrogens and androgens—may, indeed, be the source of the estrogen excretion found at the menopause period.

*Third article in the series.

And so the clinician finds himself back in the old trial-and-error groove of "empiricism", keeping as closely to the charted channel of scientific investigation as results permit. The results of his therapeutic ventures will show him the wisdom in Freed's recent statement: "Studies of the hormonal content of urine, blood and tissues are of significant value only when considered in relation to the clinical history, physical findings and other laboratory data of the patient. There are few tests which when considered apart from other evidence can be used safely for diagnostic purposes."

Endocrine Dosage

There are some queer quirks in prevailing notions about endocrine therapy. One of the most conspicuous is the idea that one can judge therapeutic effects by the aggregate amount of the substance administered regardless of the time required for that administration—that 100,000 units of an estrogenic preparation, for example, given in small doses over a long period, produce the same ultimate therapeutic effects as though the same number of units were given in a single dose, or in more concentrated doses. That, of course, is precisely like assuming that a thin layer of anything spread over a broad surface produces the same effect as though the substance were placed in a single pile or scattered about in hummocks.

This conception opposes the general laws of therapeutics as well as those of physics, physiology, and dietetics. In effect, it assumes that a push has the same effect as a punch; that a tattoo of small blows produces the same ultimate effects as one heavy smash.

When one stops to reason, the fallacy of the "aggregate amount" conception of endocrine therapeutics is obvious. And probably the best, and certainly one of the most spectacular demonstration of this, is the measurable effects upon the patient and the endocrine system by "shock" doses of metrazol. Thus, if sufficient metrazol is given to produce a convulsion, a transformation often occurs in the mental and physical state of the patient, temporarily, at least. The physical change is shown in what appears to be adrenal cortex activity, or an involvement of the adrenal mechanism.

There is an immediate and marked rise in the blood pressure following the convulsion. Yet, if the amount of metrazol given is not enough to produce the profound reaction shown in the convulsion, there is no rise in blood pressure, no stimulation, or an insufficient stimulation, to affect the blood pressure mechanism. The difference in dosage may be only a matter of fifteen or twenty percent, but the difference in effect is cataclysmic.

An investigator, following the conception of small-dose aggregate-amount effects, might administer small doses of metrazol for years without discovering its real therapeutic possibilities. We are proving this conception in our vitamin dosage. And there are good grounds for believing that the same general rule applies to many of the endocrine preparations. Indeed, the recently developed "high-powered" endocrine products are forcing the issue. Thus, in psychotic conditions of the climacteric, the socalled involutional psychoses, in which the endocrine imbalance is obvious, our recent tendency to administer hundreds or thousands of "units", instead of the tens or fifties of a few years ago, is getting results in cases where only failures resulted from the inadequate dosage.

As recently as five years ago, articles were published about the treatment of involutional psychoses, in which the authors were forced to the conclusion that "estrogenic substances had no effect whatever upon the course and final outcome of these conditions"—which is usually permanent mental deterioration. But the authors had used merely "baby doses" in their treatment —"300 I.U. of an estrogenic substance two or three times a week, a total of 4,800 I.U. in six weeks."

Such dosage had long been regarded by myself and my associates as inadequate. And just at that time, through an inadvertence, one of our desperately paranoid involution cases received 10,000 R.U. of an estrogenic preparation (*a*-estradiol benzoate), at a single dose. The nurse had misinterpreted the label on the ampoule which was in rat units instead of international units, and we did not discover her mistake until the substance had been injected beyond recall. So we tried to keep our hair flattened as much as possible and waited.

No evil symptoms developed in the first twenty-four hours. Indeed, the woman seemed, if anything, a little better. So when the time arrived for a second dose, we repeated the 10,000 R.U. and again for the third treatment on the seventh day, as by that time there was no question about her decided improvement. The final results are given as Case I of the list that follows. But meanwhile our experience with this one case pointed the way, and indicated the possibilities in large endocrine dosage. The following cases illustrate this:

Case Histories

CASE I.—Mrs. L., a woman aged fifty-two, the mother of three grown-up children, living with her husband to whom she had been married for twenty-eight years. She had always been of a cheerful disposition, happy and contented; but rather suddenly she developed characteristic paranoid ideas involving unfaithfulness of her husband, poisoned food, with great depression and suicidal attempt. She was brought before the Insanity Commission for commitment to a State Hospital, but was diverted to a sanitarium for intensive endocrine treatment. This treatment consisted of 10,000 R.U. of *a*-estradiol benzoate every third day for three doses, then every week for four weeks. Her response was so satisfactory that by the end of the second week she doubted the reality of her delusions, and by the end of the first month she not only rejected her former delusions but laughingly expressed her amazement that she could have ever believed "such foolish things" as she expressed it. At this time, four weeks after entering the sanitarium, she was discharged as clinically well, and received the treatments that followed in her physician's office.

A year has elapsed since her last treatment and she remains normal in every respect—just her old normal self, as her physician and family and friends all testify.

CASE II.—B. C., aged fifty-three, the mother of two grown children. Her husband was dead; she had been a widow for six years. She gave a history of regular menstruation up to six years ago when she skipped several periods and finally menstruation ceased entirely three years ago. At that time she had some periods of discomfort, hot flashes, and other changes suggesting menopause but comparatively inconsequential. A year ago she began to have dizzy spells, and acted queerly. She became rather listless and somewhat depressed, finally becoming dull even to the point of stupidity.

She was examined in a psychiatric court, declared insane (psychosis, involution type), and sent to a sanitarium. She would not talk, but would do what she was told to do, and seemed completely demented. She was given 10,000 R.U. of *a*-estradiol benzoate every fourth day, and five grains of thyroid daily. She showed almost immediate and gradual improvement, and had cleared up completely by the end of the fourth week, when the estrogenic dosage was reduced to 1,250 R.U. twice weekly, for two weeks, and once a week thereafter for four months. In the meanwhile, she had become normal mentally and was discharged from sanitarium care at the end of six weeks.

It is an interesting fact that she was taking, and had been taking thyroid for four months previous to her psychotic attack.

On two occasions, about three months and five months following her discharge, she "felt herself slipping" and was given one dose of 1,250 R.U. of *a*-estradiol benzoate on each occasion. On another occasion, three months following this, she stopped taking thyroid, took on weight rapidly and was "logy", but there was no return of mental symptoms. Thyroid restored her to a normal level again.

CASE III.—A woman, aged forty-nine, the mother of two children (girls, aged fourteen and sixteen) living with husband, had shown menopausal symptoms for two years—irregular menstruation, and hot flashes. Finally, she developed systematized paranoid delusions. During this period she had taken various estrogenic preparations, but irregularly and in comparatively small doses. Finally, she became so possessed with paranoid ideas involving her husband and various members of her family that she sought police protection, was taken to the psychopathic ward, and committed. She required restraint in bed for several days.

She was then given 10,000 R.U. of *a*-estradiol benzoate every third day, and general sanitarium care for a period of one month, then 5,000 R.U. every fourth day for another month. Her delusions abated in their

intensity, she was able to control herself, perform the usual household functions after the eighth week, and after twelve weeks' treatment was taken home by the members of her family and has remained at home since, eight months ago.

I learned only after beginning treatment, that this case was really one of long standing rather than strictly involutionary. She had had these paranoid ideas in mild form for several years, it seems, so that her condition at the involution period was really an exacerbation of a long standing, mild psychosis.

It is an interesting commentary on the value of "family opinion" in these psychotic cases, that this woman's family feel that she has entirely recovered. However, judged by the standard of her former condition, which is the family criterion, one can understand their attitude.

Case IV.—M. S., aged fifty-six, with one grown-up child, and living with husband who is something of an invalid. Menstruation and menstrual symptoms had continued up to fifty-two years of age. Then, irregularity, flashes and finally definite delusions and character change occurred. Also, during the last two years she had taken on weight of "pituitary" distribution, and had developed also well marked symptoms of neurocirculatory asthenia.

She was given 5,000 R.U. of *a*-estradiol benzoate every fourth day, and five grains of proloid by mouth daily. She improved rapidly mentally, her delusions gradually fading out until she was practically normal. She also lost twenty pounds in weight in five weeks. But the neurocirculatory symptoms continued, even when ten grains of proloid was given daily, and some adrenal cortex preparation.

Mentally, she was in condition to go home at the end of nine weeks, and did so; but because of the failure to improve physically and as adequate treatment was not available at home, she returned to the sanitarium after three weeks, where treatments of proloid (ten grains daily) and one cc. of alfalfa proteal every other day, gradually overcame her neurocirculatory symptoms.

It was not considered necessary to continue the estrogenic preparation except twice a month after the eighth week of active treatment.

Case V.—A woman, aged forty-seven, of a highly neurotic temperament, began showing definitely psychotic episodes about three months before, in which she had become so confused that she could not carry on her usual affairs. She was depressed to such a degree that she was considered suicidal. At the time of our first examination she gave a history of "ovarian treatments" a few years before which had proved effective (she thought), so she was given rather small doses of estrogenic preparation (about 2000 I.U. twice weekly) for about three months without any noticeable improvement. Indeed, her symptoms had become very much worse. She was then given 10,000 R.U. of *a*-estradiol benzoate twice weekly, with one weekly dose of five mg. desoxycorticosterone acetate.

The first effect of the 10,000 R.U. *a*-estradiol benzoate produced a thirty-six hour activity of the uterus that was extremely painful. But, meanwhile, there was a great improvement in symptoms and mental reactions. She felt that she was really benefited to a degree that completely outweighed the physical discomfort. The same amount, 10,000 R.U. was repeated on the fourth day, and continued thereafter for eight doses; then reduced to 1,250 R.U. twice a week for six weeks, and then weekly for eight weeks.

During the last six weeks there were practically no symptoms and the estrogenic preparation was administered simply as "precautionary". For more than eight months now she has remained clinically well and without medication of any kind.

Case VI.—A widow, aged fifty-three, who had "passed through the change" two years before, with some hot flashes and discomfort. Her family had noted a considerable change in her nervous reactions at that time, but there was no very grave disturbance, and she was in excellent health for almost two years. A month before coming under our observation, however, she began developing some paranoid ideas which finally focused upon her daughter; and she became so threatening that it was necessary to send her to the Psychopathic Hospital. After a few days there her paranoid ideas seemed much improved except the one idea about her daughter, which seemed to be a pretty well fixed delusion.

She was placed in a sanitarium and 10,000 R.U. of *a*-estradiol benzoate was given every fourth day for four doses. Then 1,250 R.U. twice a week for four weeks. By the end of the second week she no longer expressed the delusions about her daughter—was skeptical about their reality—and was generally improved mentally and physically. By the end of the fifth week her delusions had disappeared. Indeed, she presented the rather anomalous condition of doubting if she had ever harbored "any such absurd ideas", and could not remember that she had. She returned home, and there has been no indication of any return of any of her paranoid ideas after six months.

In this connection, this woman's attitude of actually forgetting that she had had any paranoid delusions, is quite out of the ordinary. Usually the paranoid patient, if she recovers, remembers the paranoid delusions very acutely, but is able to evaluate them as delusional ideas—as in Case I of this series. Other types of psychotic cases, such as the manics, frequently are entirely amnesic about their past delusions even over long periods of time. This case, however, seemed to be typically paranoid, and it is a reasonable deduction that recovery from the paranoid delusions was influenced by the estrogenic treatment.

Case VII.—A woman aged fifty, a widow for thirteen years, no children, no pregnancies. She had always had painful menstruation periods which were rather scant and ceased entirely, after some irregularity, at forty-four. She was a thin, energetic, "worrisome" type of woman, suppressed emotionally. About six months before coming under our observation she gradually became depressed and developed paranoid ideas of poverty, which were without foundation. Finally, she became so seclusive that it was found necessary to have her placed in a sanitarium for treatment.

She was given 2,000 R.U. of *a*-estradiol benzoate every other day for three doses, then 10,000 R.U. at three day intervals for six doses, and finally, 10,000 R.U. at four day intervals for six weeks. At the end of this period she was given 1,250 R.U. weekly until the end of the third month. She began to gain weight and improve after the third week; and by the end of the

third month was practically free from delusions or symptoms of any kind, and in better general health than for many years. She has continued so for almost a year now.

CASE VIII.—A woman, fifty-three years of age, a widow, the mother of five children, the youngest thirteen years old. Maternal family history was bad. Menstrual history was normal, menopause apparently finished at fifty. Three months before coming under our observation the patient became depressed, worried over the health of her children (which was excellent), neglected her work and was careless of her appearance. She did not eat well and was sleepless and restless at night. Finally, she became so agitated and distressed that sanitarium treatment was thought necessary. She was given 10,000 R.U. of *a*-estradiol benzoate twice a week, with sedatives at night. After the second week, five grains of proloid was added daily.

There was no improvement in her mental symptoms for three weeks, although her appetite was somewhat better. During the fifth week her agitation was considerably less, and the following week it was decidedly so. Her general condition, also, continued to improve steadily from that time on; and her mental state improved correspondingly. At that time the estrogenic preparation dosage was reduced to 10,000 R.U. and 1,250 R.U. alternately on the fourth day. After the eleventh week the dosage was reduced to 1,250 R.U. weekly. The proloid was continued throughout the treatment and for four months following her discharge, although her mental condition had become normal, and has continued so (six months later).

CASE IX.—This patient was a widow, aged forty-six, who had had a complete hysterectomy ten years before but gradually developed typical menopausal symptoms following the interval during which she had felt none whatever and had been in excellent general health. She developed, also, the psychotic symptoms that characterize this period—depression, apprehension, and suspicions. She lost weight, was somewhat anemic, and had persistent insomnia. Her physician, recognizing the cause of the condition, gave her estrogenic preparations over a period of eight months in small doses (about five hundred international units twice weekly) with occasional rest periods when she took only mild sedatives and no endocrine substances whatever. It was significant that, although her symptoms did not entirely disappear during the periods of treatment, they were considerably improved; and she lapsed into her former bad condition during the rest periods.

Taking the hint from these conditions, 10,000 R.U. of *a*-estradiol benzoate was prescribed every third day. The patient responded quickly and by the end of the first month had regained her normal mental condition, although she was then reduced to 1,250 R.U. every fourth day for two months, and finally once a week over a period of five months, during which time she regained her normal weight and was mentally as well as physically normal.

The transformation that took place in this woman when her normal endocrine balance was established, or *vice versa*, was most striking. When normal she was an erect, intelligent, vivacious, attractive and most likable person. When out of balance she was precisely the reverse, with a vengeance—a stooped, whining, complaining, suspicious shrew, with about the same degree of repulsiveness as she showed in attractiveness when her own self. In her case, the difference in personality seemed absolutely dependent upon the amount of estrogenic hormone in her system.

CASE X.—A widow, aged fifty-one, had been showing mental peculiarities for almost a year, and her physician had given her small amounts of an estrogenic hormone preparation from time to time—probably one thousand international units weekly—without any appreciable effect. Suddenly she developed paranoid delusions against a member of her family of so aggressive a nature that it became necessary to place her in a psychopathic hospital. She was given 10,000 R.U. of *a*-estradiol benzoate at five day intervals for four doses. Her delusions cleared up by the end of the second week, and her mental attitude entirely changed. At the end of five weeks she was discharged and she has remained normal ever since (over six months to date).

It is not asserted or claimed that these large doses represent the optimum or even the necessary amounts of the estrogenic units administered in every case, perhaps in any case. Indeed, in a series of cases that are under observation and treatment in which the abnormal state of the patients does not represent an actual psychosis, smaller amounts of the estrogenic units have been found effective following one or more initial large doses. This may indicate the degree of psychopathology in the individual; for it is a common observation that it is necessary to give larger doses of practically any drug to get effects in patients suffering from a pronounced psychosis than in the average normal individual.

In each of the cases just described there was a definite psychosis. The condition was unequivocal. And as none of the patients showed any ill effects from these doses, but quite the reverse, and in view of the failure of inadequate doses in similar cases, the large doses were continued probably beyond the point where reduction would have been possible. It was a question of "just when to let go", and the ultimate results indicate that, at least, we did not "let go" too soon in the cases cited.

The cases just referred to have all been under observation for practically a year now without recurrence of their former psychoses.

The following case is more recent, but as it appeared to be less hopeful than most of the others, it is recorded here:

CASE XI.—Mrs. R., aged fifty, no children or pregnancies, a very beautiful, cultured and highly educated woman, of rugged stock with excellent family history, married to a man who was a worthy mate in every way, whom she loved deeply and sincerely. She had little cause for worry and no cause for jealousy. Yet, for more than five years before coming under observation she had been developing paranoid symptoms that increased in intensity until at last it was found necessary, on the advice of a physician who had known her for many years, to place her in an institution for permanent custodial care. During the past five years she had received treatments, including what was considered rather intensive endocrine treatments, under excellent physicians, without benefit. Shock treatments were ruled against by several physicians who favored and used them constantly in suitable cases. At the time

of entering the institution it was necessary to use sedatives and mechanical restraint.

However, despite the history of endocrine treatment failures, and the generally hopeless prognostic outlook, the attending physician, Dr. E. H. Kelly, at El Encanto Sanitarium, Puente, California, began a course of intramuscular injections of *a*-estradiol benzoate, 10,000 R.U. every fourth day. Sedatives were discontinued after the second week, the patient's appetite and general physical condition improved steadily, and there was a gradual recession of her paranoid delusions. By the end of the ninth week of treatment she could joke about her "former ideas"—could not understand how or why she had ever had them or believed their reality. At the end of the twelfth week she returned home to her husband who declares she is "like her old self in every way—for the first time in over five years". She is receiving 10,000 R.U. of *a*-estradiol benzoate injections once a week.

Comment

It is undoubtedly of considerable significance that all these cases received the usual routine sanitarium treatment of such cases, including a certain amount of sedation. None of them were treated at home. This, of course, played an important part in the final results as it does in all such cases regardless of special treatments. However, in each case emphasis was given the endocrine treatment and the usual routine measures minimized, so as to get as correct a perspective of results as possible.

The amount of sedatives necessary in these cases was relatively small and the time of reduction appreciably lessened. This may have been coincidental, of course, but it was nevertheless true in each of these eleven cases; and we have observed this reduction possibility repeatedly in many other cases given similar treatment.

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A QUANTITATIVE STUDY OF NORMAL AND PATHOLOGICAL STATION IN HUMAN SUBJECTS*

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The ability to maintain equilibrium while standing erect is accepted as a clinical procedure of value in testing for the integrity of the nervous system. In practice this is usually estimated by having the patient stand with his feet together and his eyes closed. To this test Romberg's name is attached. When describing the unsteadiness of station that he found in cases of tabes dorsalis, Romberg (19) said: "It is now ten years since I pointed out this pathognomonic sign, and it is a symptom which I have not observed in other paralyses, nor in uncomplicated amaurosis; since then I have found it in a considerable number of patients from far and near, who have applied for my advice; in no case have I found it wanting." It is recognized now that the test is less specific than Romberg believed; but, nevertheless, it still has considerable diagnostic significance.

Under ordinary clinical conditions evaluation of a disturbance of static equilibrium depends upon the examiner's personal judgment. Quantitative measurements free from subjective impressions of the examiner are rarely made.

Three Groups of Investigators

The problem of making tests of static equilibrium more objective has received attention from several sources. Most of the studies hitherto reported can be classified into three main groups: 1, those establishing standards for healthy subjects under conditions varying with respect to position of the feet, direction of attention, and use of vision; 2, those in which certain functional changes in the neuromuscular system were investigated; and 3, those considering the application of quantitative measurement of body sway clinically in the diagnosis of diseases of the nervous system.

The majority of the investigators belong to the first group. They have measured the sway of normal subjects trying to stand as steadily as possible. A constant observation was that nobody could stand absolutely motionless for any appreciable length of time. The amount of sway occurring has been shown to vary considerably within a group of normal subjects (Hinsdale, 10; Bullard and Brackett, 2; Hancock, 8; Miles, 12; Brammer, 1; Fearing, 4; Moss, 15; Eichkern and Skaggs, 3). Also individual fluctuations are described (Miles, 12; Fearing, 4; Eichkern and Skaggs, 3). Modifications in the test routine can influence body sway. The position of the feet is one of the variables in the investigations reported. Usually the feet were placed close together, either parallel or in a V-position. The latter position was found more stable than the former (Fearing, 4). The duration of the test period has not been uniform, although it is obvious that this has a bearing on the amount of sway. In several reports the duration of the test period is not given; where mentioned, it was most commonly one minute.

The influence of vision upon sway has been considered by practically everyone interested in the problem. The majority concluded that sway was increased on closure of the eyes (Hinsdale, 10; Hancock, 8; Brammer, 1; Eichkern and Skaggs, 3). However, the results in one group (Bullard and Brackett, 2) were interpreted to indicate greater stability with eyes closed. Comparisons between tests in which the subject's attention was distracted and tests without specific distraction are somewhat inconclusive. Fearing (6) found that subjects whose attention was diverted by auditory means swayed appreciably less than those whose attention was not specifically distracted. Skaggs, Skaggs, and Jardon (22) showed that, as compared with attention directed only to the task of maintaining position, sway was less with attention directed to multiplication problems but more with attention directed to reading. Williams (24) has

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pointed out how suggestion can sometimes play a rôle in this type of test. The influence of several other factors, such as sex, age, height, weight, and type of footwear (Hancock, 8; Miles, 12; Fearing, 4; Eichkern and Skaggs, 3; Skaggs, 21) has been considered; but the evidence that these items are important is not convincing. Because of these variables and differences in method of approach, many of the previous investigations cannot be satisfactorily compared with each other nor applied as a basis for further research. In a number of experiments inadequate statistical analyses of data make it hazardous to accept the conclusions drawn; this adds to the difficulties encountered in attempting to define normal standards of sway from a review of the literature.

The second group of workers has employed tests of static equilibrium to measure functional changes in the neuromuscular system. A diurnal variation of steadiness has been found (Moss, 15; Omwake, 17). Greatest stability is present in the early afternoon. There is objective evidence that an impairment of static equilibrium develops as a result of sleeplessness (Lee and Kleitman, 11) or fatigue (Moss, 15, 16) and after the ingestion of dilute alcohol (Miles, 13). Efforts have been made to judge aptitude for flying from studies of static equilibrium (Brammer, 2; Henmon, 9), but the correlation is not significant.

The third group has approached the problem from a clinical viewpoint. Only a few contributions have been made dealing with quantitative measurements of the pathological station associated with diseases of the central nervous system. These studies have been rather limited in scope. Mitchell and Lewis (14) tested patients with locomotor ataxia; they were able to divide the patients into four groups depending upon whether stability was normal, slightly impaired, greatly impaired, or whether they were paralytic. Hinsdale (10) found that blind persons swayed on the average about the same as normal individuals with their eyes closed. Deaf-mutes, too, swayed about the same as normal subjects. In studying several cases of locomotor ataxia he found the amount of sway to be increased; the abnormality was more pronounced with eyes closed than with eyes open. Cases of chorea also showed increased sway.

Wallin (23) measured the body sway in a group of institutionalized epileptics. The results indicate no significant deviation from normal. Rosenfeld (20) emphasized the clinical importance of quantitative studies of station under more routine conditions. He tested neurotic and hysterical patients as well as those afflicted with organic nervous system diseases, such as multiple sclerosis and tabes dorsalis. In the latter two conditions marked increase in the amount of sway was demonstrated. Rosenfeld believed that certain ailments produced a more or less characteristic pattern of sway and commented on the possible diagnostic value of this feature.

Ricaldoni (18) obtained records of the body sway of patients with tabes dorsalis, Friedreich's ataxia, hyperthyroidism and parkinsonism but did not make quantitative studies. There have been no systematized investigations carried out to determine the frequency with which abnormal sway occurs in neurological disorders, the degree of deficiency and the modifying influences.

Methods of Obtaining Records

In the studies previously reported different techniques have been used for measuring sway. The principal methods of obtaining records are: 1, by means of an apparatus fixed to the subject's head which either records the sway graphically (Hinsdale, 10; Bullard and Brackett, 2; Hancock, 8; Wallin, 23; Rosenfeld, 20; Lee and Kleitman, 11; Miles, 13) or sums up the total linear amount of movement (Miles, 12, 13; Brammer, 1; Fearing, 4, 5, 6, 7); 2, by attaching to the subject's body a rod carrying a platform on which an index overhead can trace movements (Eichkern and Skaggs, 3; Skaggs, Skaggs, and Jardon, 22; Skaggs, 21); and 3, by placing the subject upright on a mobile platform and recording the movements that occur as his weight shifts from one foot to the other or from heel to toe (Ricaldoni, 18; Moss, 15, 16; Omwake, 17). The graphic records obtained by the first two methods are similar in some respects; however, the second has an advantage over the first in its independence from movements of the neck muscles. The tracings outline the course that the sway takes; the range of the movements and the character of the oscillations are shown particularly well. These are features of the greatest interest to a clinician who tests for static equilibrium. It is doubtful that he acquires as valuable information from an expression of the total linear amount of movement or in a record dependent upon shifts in body weight as in the third method described above.

An entirely satisfactory system for scoring such graphic records of sway has not been described. Most investigators have used the extreme ranges of movement along the anteroposterior and lateral axes (Hinsdale, 10; Bullard and Brackett, 2; Hancock, 8; Wallin, 23; Miles, 13). These measurements are simply obtained but are undoubtedly subject to chance deviations. Multiplying the measures by each other gives a value which has been referred to as the area of sway (Miles, 13); this is an even less sound basis for making comparisons. Another measure of sway has been the distance between the point at which the test started and the point furthest removed from that (Eichkern and Skaggs, 3; Skaggs, Skaggs, and Jardon, 22; Skaggs, 21). This latter and other attempts (Bullard and Brackett, 2) to break down the components of a tracing to determine their relations to the starting point seem futile because of the numerous chance factors that affect its position. All these methods of scoring take account only of the extreme limits within which movement occurs and largely neglect the relative amounts of sway. Measurement of the total linear distances moved is not possible from most graphic records unless the duration of the test is very short.

Types of Subjects Used in Test

The following investigation was begun for the purpose of further studying body sway, both in healthy individuals and in those with certain diseases of the central nervous system. Eighty-four normal subjects were tested to establish statistics under varying test conditions. Subjects with four types of central nervous system disease were also tested and an attempt made to analyze the results quantitatively in comparison to normals. These latter subjects were divided as follows: seventeen with idiopathic epilepsy, twenty-one with tabes dorsalis, thirteen with multiple sclerosis, and

seven with combined degeneration of the spinal cord associated with pernicious anemia.

Experimental Methods

Apparatus.—A horizontal platform on which a sheet of writing paper could be affixed was attached to the upper end of a rod 100 cm. long. This rod was fastened to the subject's back by straps crossing in the uppermost portion of the chest and going over the shoulders as well as by straps encircling the pelvis. A block was fitted into the lumbar curvature for additional support. The straps and block were attached so that they could be shifted up or down the rod for adjustment of the platform height. When this equipment was properly fitted, the platform was horizontal and held rigidly just above the top of the subject's head. Wavering of the body-piece was not produced by ordinary respiratory movements though it moved freely with any sway of the subject's body. As a writing index, a fountain pen was spspended above the subject. This was mounted in a frame which projected horizontally from an upright shaft (Fig. 1). The pen could move freely vertically but not horizontally. As the subject stood beneath the pen, a continuous mark was made on the paper tracing the body movements. The record obtained was in black ink and needed no further preparation for preservation (Fig. 2).

FIG. 1.—The apparatus.

Subjects.—The normal subjects were selected from hospital personnel. Most of them were either medical students or nurses. The group was made up of eighty-four individuals, forty-four males and forty females. Their ages ranged from nineteen to thirty-two years; their heights from 152 to 188 cm.; and their weights, from 46.3 to 106.6 kg.

Patients attending the Out-Patient Clinics of the University Hospitals comprised the abnormal groups. Selective factors other than diagnosis were avoided as far as possible in chosing them. The only grounds for rejecting a subject who was potentially suitable on the basis of diagnosis were: 1, inability to stand unsupported under favorable circumstances, and 2, the presence of some other pathologic condition such as bone or joint disease which in itself impaired static equilibrium. The patients with idiopathic epilepsy ranged in age from sixteen to fifty-three years; in height, from 160 to 185 cm.; and in weight, from 49.9 to 80.3 kg. There were fourteen males and three females in the group. About half were taking anticonvulsive drugs. The ages of the patients with tabes dorsalis varied between thirty-five and sixty-seven years; their heights ranged from 160 to 183 cm.; and their weights, from 54.4 to 83.5 kg. Seventeen of them were males and four females. This group includes a few cases diagnosed as taboparesis. The individuals with multiple sclerosis were twenty-three to fifty-seven years of age; their heights were between 152 and 180 cm.; and their weights, 45.4 to 72.6 kg. There were five males and eight females. One was a nurse who, when tested as a member of the normal group, manifested an unusually great amount of sway for a healthy person. Her poor stability was explained when she developed unmistakable evidence of multiple sclerosis three months later. She was not tested again after the diagnosis was established. The cases with combined degeneration of the spinal cord showed a range in age from fifty-two to seventy-one years; in height, from 150 to 180 cm.; and in weight, from 59.9 to 88.5 kg. Five of these patients were males and two were females. They had received treatment for pernicious anemia, and the hemoglobin levels were normal or close to normal in all.

Procedure.—The system for studying normals was changed during the course of investigation. The original procedure consisted of four series of tests done on two different days. Tests were made with the writing platform six feet above the floor for all subjects, and the results were compared with those obtained when the platform was placed just above the head of each subject, the distance from the floor varying from case to case with the height of the subject. A statistically significant difference was not found, so the tests with the writing platform at a constant level for all subjects were not continued. In another series introspective reports of the amount and direction of sway were obtained. The results were not appreciably different from those of similar tests in which no introspective reports were secured. Therefore, this series was also discontinued.

The two series which offered most promise for further investigations both provided recordings with the writing platform just above each subject's head. In one no special instructions were given regarding the direction of the subject's attention. In the other auditory distraction was used to divert attention from the immediate task of standing motionless. Tests were made with eyes open and closed. Originally three positions of the feet were routine: feet together, 30 cm. apart, and 60 cm. apart. The results under the latter two circumstances proved so similar that it seemed unnecessary to continue both. Tests with the feet 60 cm. apart were eliminated. Thirty-five subjects were given all the tests described. One of the thirty-five was the nurse mentioned who developed multiple sclerosis shortly afterwards, so the results in that instance are not included in the normal data. Eight different tests on each of the other thirty-four subjects

FIG. 2.—Records of the Romberg test from two normal subjects. A is from one of the most stable subjects tested; the score is 19. B is from a subject with relatively poor stability; the score is 81.

are included in the final study. After a change was made in the method of investigation by reducing the number of tests, fifty additional healthy subjects were examined. Each of the subjects was tested eight times under different conditions; these were identical with eight of the tests given the first group. It was determined by statistical methods that there were no significant differences in the results obtained by the two groups of normals in spite of the change in procedure. Hence, they are considered together in the final computations.

All of the tests were done in a quiet room. No change in the daily routine of any subject was made in preparation for testing, but on no occasion was anyone tested who complained of feeling unduly tired. At the outset the object of the study was outlined briefly for every subject. During the test soft flat canvas slippers were worn; practically this was tantamount to being in stocking feet. The subject had his back toward the upright which supported the overhead piece and faced a blank wall. Each test lasted one minute. The feet were placed together and 30 cm. apart. In the latter position they were sometimes parallel and sometimes toeing out, depending upon the subject's preference. In the beginning no special instructions were given regarding the direction of the subject's attention. He stood with eyes open, first with feet apart and then with feet together. The same tests were repeated with the eyes closed. In a second series auditory distraction was used to divert the subject's attention. He was required to count rapid, irregular clicks and to report the number with reasonable accuracy at the end of each test interval. Four tests were done with distraction under the same conditions as without specific distraction. With the original group of thirty-four normal subjects the tests were spread into two days. Each of the additional fifty normal subjects and every abnormal case was given all of the tests in one day. Most examinations were made in the afternoon. Rest periods were arranged between tests so that fatigue was avoided. The subjects were not permitted to see the records prior to the completion of the entire program.

FIG. 3.—Records from two subjects standing with feet apart. These illustrate the advantage that the system for scoring used in this study has over a measure dependent only upon the extreme limits of sway. Measurements of the range of movement along the anteroposterior (AP) and lateral (Lat.) axes are practically the same in both cases. In A, AP=47 mm. and Lat.=13 mm. In B, AP=45 mm. and Lat.=15 mm. From inspection of the records, it is apparent that A shows greater stability than B. The score for A is 18. The score for B is 32.

Measurement: To obtain a quantitative measure a system of scoring was used which took account both of the area covered in swaying and the amount of movement within the extreme ranges. A piece of transparent celluloid ruled into 4 mm. squares was placed over the record. Squares which contained any portion of the tracing were then counted. The smallest number required to account for the entire tracing was the score for the test. Regardless of its relative position, no square was counted which did not overlie some mark on the record. With this system the larger the score the poorer the stability. The 4 mm. size for the square was selected after preliminary study showed it was small enough to satisfactorily bring out essential differences and yet large enough to work with conveniently. That this is a more reliable basis for making comparisons than are measurements dependent only upon the extreme limits of motion along the anteroposterior and lateral axes is illustrated by sample records appended (Fig. 3).

The results of the eight different tests given to the eighty-four normal subjects were analyzed to obtain the mean (M) and standard deviation (s) for each distribution. Correlations (r) were found for selected pairs of measurements. The standard errors of all the differences obtained were corrected for correlation between the corresponding variables.

Experimental Results: Normal Subjects

(a) *The variations in sway produced by changing the position of the feet.*—The purpose of securing records with the feet together as well as 30 cm. apart was to attempt statistical verification of the observation reported by others that narrowing the base of support increases body sway. (See Table I.)

The means obtained under the test conditions where the feet were placed together are consistently larger than those with the feet apart. The critical ratios indicate that these differences are all very significant. The conclusion is justified that there is greater sway with the feet together than with the feet apart.

(b) *Influence of vision upon sway.*—While it may be recognized that individual exceptions sometime occur, clinicians generally assume that the amount of sway increases with closure of the eyes. In Table II comparisons are made to illustrate the influence that vision has.

The means with eyes closed are all larger than the corresponding means with eyes open. The critical ratios for the tests with feet together are greater than those with feet apart. In every instance the value of the critical ratio is above 3.0 and the difference between the means can be considered reliable. These results indicate that more sway occurs with the eyes closed than with the eyes open.

(c) *The effect of distraction upon sway.*—It is often claimed that persons sway more when attention is on the task of maintaining balance than when they are distracted. In order to test the truth of this a series of measurements were made with auditory distraction. These were compared with data from records obtained while the subject's attention was not being diverted. Table III summarizes the results.

All of the means are lower when distraction was introduced. However, the critical ratios are, with only one exception, below 3.0. In spite of these low values, significance can be attached to the fact that the directional trend evinced by the differences between the means is persistent. The critical ratio of the difference between the means when the subjects stood with feet together and with eyes closed is 4:7; this is statistically reliable. The results indicate, then, that under these test conditions the effect of distraction is to diminish the amount of sway.

(d) *Individual variability on repeated testings.*—To determine the amount of variability in the same indi-

Table I: Comparisons of the Amount of Sway with the Feet Together and 30 cm. Apart. In the Determination of Differences a Positive Value is Arbitrarily Assigned to Data Obtained with the Feet Together.

	Feet Apart M	Feet Apart s	Feet Together M	Feet Together s	r	Diff.	Critical Ratio
Without Distraction							
Eyes open	14.3	5.84	36.5	15.60	+.62 ±.046	+22.2	15.8
Eyes closed	17.0	8.24	49.5	19.30	+.47 ±.057	+32.5	17.5
With Distraction							
Eyes open	13.6	6.28	33.0	12.10	+.50 ±.055	+19.4	17.8
Eyes closed	15.6	5.72	43.0	20.20	+.46 ±.058	+27.4	13.8

Table II: Comparisons between Measurements of Sway with Eyes Open and with Eyes Closed. In the Determination of Differences a Positive Value is Arbitrarily Assigned to Data Obtained when the Eyes were Closed.

	Eyes Open M	Eyes Open s	Eyes Closed M	Eyes Closed s	r	Diff.	Critical Ratio
Without Distraction							
Feet apart	14.3	5.84	17.0	8.24	+.63 ±.044	+ 2.7	3.9
Feet together	36.5	15.60	49.5	19.30	+.59 ±.048	+13.0	7.4
With Distraction							
Feet apart	13.6	6.28	15.6	5.72	+.61 ±.046	+ 2.0	3.6
Feet together	33.0	12.10	43.0	20.20	+.66 ±.041	+10.0	6.0

Table III: Comparisons between Data Obtained with and without Auditory Distraction of Attention. In the Determination of Differences a Positive Value is Arbitrarily Assigned to the Data Obtained without Distraction.

	Without Distraction M	Without Distraction s	With Distraction M	With Distraction s	r	Diff.	Critical Ratio
Eyes Open							
Feet apart	14.3	5.84	13.6	6.28	+.47 ±.057	+0.7	1.0
Feet together	36.5	15.60	33.0	12.10	+.56 ±.051	+3.5	2.3
Eyes Closed							
Feet apart	17.0	8.24	15.6	5.72	+.45 ±.059	+1.4	1.7
Feet together	49.5	19.30	43.0	20.20	+.79 ±.029	+6.5	4.7

vidual on repeated testings three subjects were each tested on ten occasions. No particular effort was made to influence the direction of the subject's attention. The series consisted of the same four tests given to the large group. Each test was done only once on a given day so that these subjects came for tests on ten different days. The results for all three subjects are included in Table IV.

That the sway of an individual is exceedingly variable from time to time is clear from these data. There is no consistent relationship between the standard deviation obtained from the repeated testings of a single subject and the standard deviation from the group of eighty-four different persons. Under most of the test conditions the former value is approximately one-half of the latter. This proportion proves greater in some instances. There is an example where the standard deviation for one subject even exceeds the corresponding value for the large group. Standing with feet apart and eyes closed Subject JS has a standard deviation of 10.0 while the value for the group is only 8.24. The fluctuations peculiar to the individual must tend to balance each other when immersed in the large sample.

Generally speaking, every distribution curve approximating normal includes six standard deviations (range from −3 to +3s) and measurements rarely fall beyond these limits. In this study the lower limits do not require detailed attention. The values for the upper limits of sway have more importance. Statistically an enormous preponderance of the cases in a normal group would be included within a distance of three standard deviations above the mean. The value resulting from the addition of three standard deviations to the mean can be reliably considered an upper limit of the normal range.

Specifically, the foregoing can be applied to the test condition where the subjects stood with feet together and eyes open without distraction of their attention. The mean score is 36.5. The standard deviation is 15.60. When multiplied by 3, the latter value becomes 46.8 which added to the mean gives 83.3. Thus it would be extremely unlikely that under similar circumstances any healthy individual would be scored above 84. A value greater than that may confidently be considered as abnormal. With the eyes closed but with the other conditions of the test remaining the same (Romberg's procedure) the corresponding score is 108. Analogous values can easily be determined for any of the other test conditions from data included in the tables.

Table IV: Data Showing the Variability During Ten Trials on Each of Three Subjects

	Subject R.P. M	Subject R.P. s	Subject R.B. M	Subject R.B. s	Subject J.S. M	Subject J.S. s
Eyes Open						
Feet apart	15.2	4.4	12.2	4.7	16.3	5.0
Feet together	25.4	4.7	26.5	7.0	43.5	9.6
Eyes Closed						
Feet apart	16.8	3.8	14.8	3.5	21.0	10.0
Feet together	34.5	8.3	32.6	5.6	50.5	12.9

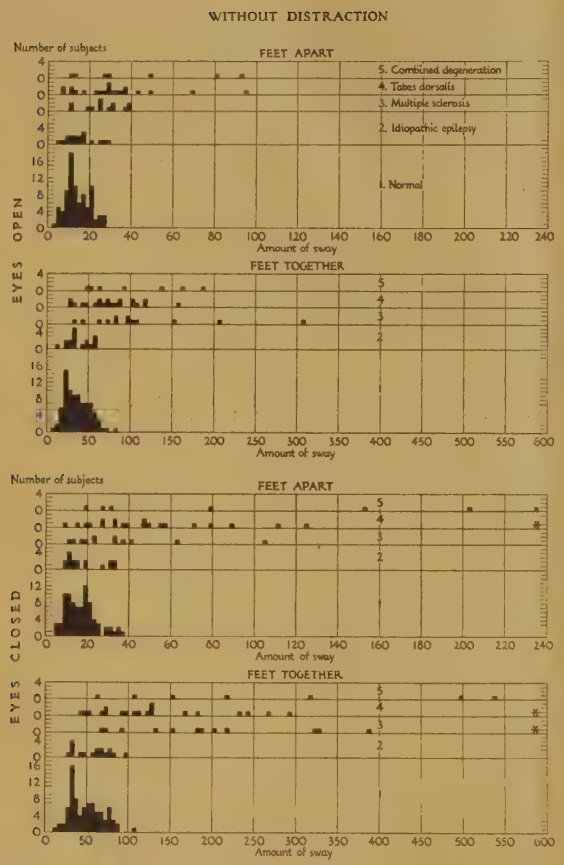

FIG. 4.—Frequency distribution of normal and pathological cases for tests without specific distraction of attention. The asterisk indicates that a subject was unable to remain standing for the duration of the test.

2. Subjects with Neurological Diseases

No characteristic pattern of sway was found for any of the diseases studied. In many instances the graphic records obtained from subjects with neurologic disorders were indistinguishable from normal records. In the cases of multiple sclerosis, tabes dorsalis and combined degeneration where the destruction of nervous tissue was relatively far advanced the oscillatory movements had a wide amplitude and the tracings were scattered over a large area. This was reflected in a high score on measurement of the records. Many scores in such cases were found to be far beyond the upper limit of normal. Even under these circumstances the configurations of the tracings showed no characteristics helpful in differentiating one disease from another.

The abnormal case results cannot be effectively analyzed statistically as were the results with normal subjects. The number of patients in each group is relatively small and the stage of the disease process varies greatly from case to case.

The accompanying histograms illustrate the frequency distribution of the scores and permit comparison of the results with the normal (Figs. 4 and 5).

It is evident that the group with idiopathic epilepsy shows no appreciable impairment of static equilibrium. This is consistent with clinical observations.

The generalizations that can be made with reference

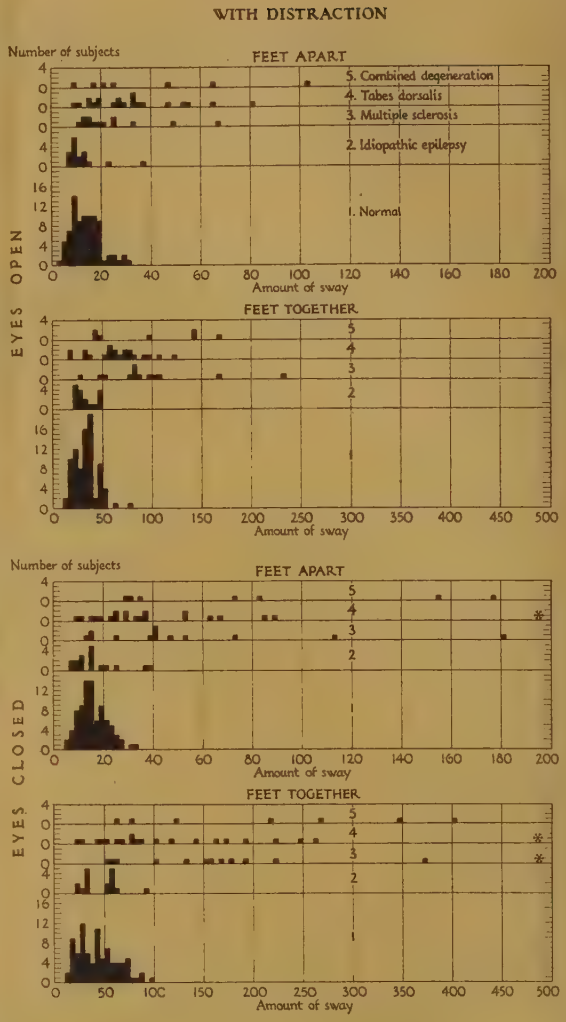

FIG. 5.—Frequency distribution of normal and pathological cases for tests with auditory distraction of attention. The asterisk indicates that a subject was unable to remain standing for the duration of the test.

to the other three diseases studied apply equally well to all groups. There are some cases that fall within the normal range under every test condition. However, the number tends to diminish either when the feet are placed together or the eyes are closed. The test requiring both that the feet be together and the eyes closed is most difficult for each group as a whole. It is in this situation that the largest proportion of cases shows abnormal sway. This is of particular interest because it lends experimental support to the clinical observation that the classical Romberg test is the most reliable procedure for use in the routine investigation for disturbances of static equilibrium. The data do not permit satisfactory evaluation of the effect of distraction on the sway of subjects with the three diseases under consideration.

Comment

Several types of apparatus have been developed for the quantitative study of body sway. Most investigators have confined their efforts to the study of healthy

subjects in an attempt to establish normal standards and to determine the influence of certain factors upon the amount of sway. Very little work has been done on the quantitative measurement of station in pathological conditions.

Differences in the experimental procedures and in the methods of measurement make it difficult to interpret the results presented in the foregoing review of the literature. Most frequently body sway has been registered graphically, and the measurements relied upon have been those of the extreme limits of movement along the anteroposterior and lateral axes. Accurate graphic records of movement of the body can be easily obtained with the apparatus described here. In evaluating the records which form the basis for the present study it seemed logical to consider the relative amounts of sway or the general nature of the oscillations as well as the extreme ranges of movement. The system described for scoring the results takes both factors into account and has, therefore, an advantage over the methods usually employed.

Many of the previous studies of static equilibrium are subject to the criticism that the statistical treatment of the results is inadequate. Consequently, the reliability of some of the conclusions drawn may be questioned. In the present series the results of tests on normal subjects are presented and interpreted with the aid of accepted statistical devices. Data are included for eight test conditions. Observations of importance are: 1, body sway is substantially greater when the subject stands with feet together than it is when the feet are 30 cm. apart; 2, sway is significantly increased by closure of the eyes; 3, distraction of attention by auditory means tends to diminish the amount of sway; 4, there is great variability in a group of normal subjects; and 5, the sway of the same individual fluctuates considerably.

The station of ambulatory patients with idiopathic epilepsy, multiple sclerosis, tabes dorsalis, and combined degeneration of the spinal cord was studied quantitatively. The object was to determine under various conditions the frequency with which divergence from the normal occurs and the degree of this deficiency. A detailed statistical study of the abnormal groups was not made because the number of cases is too limited. However, from the data presented certain inferences emerge. The patients with idiopathic epilepsy show no appreciable impairment of static equilibrium. There is considerable variation in the sway of subjects included in each of the other groups. This is to be expected since the case material represents various phases of central nervous system involvement. Subjects were found with no more than normal sway in each group of diseases and under every test condition. Sway is least when the subjects stand with feet apart and eyes open. Placing the feet together or closing the eyes causes greater instability and in either situation the proportion of cases showing abnormal sway tends to increase. Where both factors are combined, as in the Romberg test, an impairment of static equilibrium is most apt to be noticeable. The effect of auditory distraction on the sway of these subjects is indefinite.

Summary

A technique for measuring body sway is described. The sway of eighty-four normal subjects was studied under various conditions. It was found that sway can be modified by changing the position of the feet, by vision, and by auditory distraction. Evidence is presented to show that there is considerable variability in the amount of sway within the normal group. Account is taken of this variability in evaluating the results. Attention is called to the fact that individual fluctuations occur; this factor is important since it appears to account for approximaately one-half of the variability noted within the large group.

The sway of ambulatory patients with idiopathic epilepsy, multiple sclerosis, tabes dorsalis and combined degeneration of the spinal cord was also studied. Graphic records reveal no intrinsic patterns of sway which differentiate one disease from another although the amount of sway may permit distinction from the normal. Normal stability is shown by the group with idiopathic epilepsy as well as by certain subjects with each of the other diseases. The proportion of cases with abnormal sway is altered under various conditions. The divergence from normal tends to be most pronounced in the situation where the feet are together and the eyes closed.

Dr. J. C. McKinley and Dr. S. R. Hathaway furnished guidance in these investigations.

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A COMPARATIVE STUDY OF THE EFFECTS OF THREE BARBITURATE COMPOUNDS IN EXCITED PSYCHOTIC PATIENTS

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This investigation had as its purpose a study of the comparative effects produced by three barbiturate compounds in a series of fifty disturbed mental patients. The three barbiturates chosen were sodium 5-iso amyl 5-ethyl barbiturate (sodium amytal), sodium ethyl 1 ethyl butyl barbiturate (pentobarbital sodium) and sodium 5 ethyl 5 (1 methyl 1 butenyl) barbiturate (delvinal sodium)[1], a new barbiturate. The structural formulae of these three compounds are given in Figures 2, 3 and 4. The configuration of the barbituric acid (mallonyl urea) radical from which all these substances are derived is indicated in Figure 1.

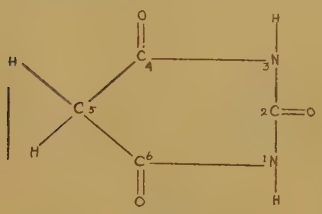

Fig. 1.—Barbituric acid.

Phenobarbital is not effective in the treatment of excited mental patients because of the large dosage and the length of time required to induce narcosis, the rapid establishment of tolerance and the occurrence of toxic effects following its continued administration. In the light of previous experience with psychotic patients, we considered that the three barbiturates mentioned above were representative for the purpose of this investigation. Sodium amytal produces prolonged and deep narcosis (1, 2, 3), while pentobarbital sodium (4, 5) induces a more rapid hypnosis of shorter duration. The results of preliminary experiments indicated that 'delvinal' sodium (6, 7, 8, 9, 10, 11) occupied an intermediate position since the depth and duration of narcosis following the administration of this barbiturate compared favorably with that produced by sodium amytal while the rate of induction was almost as rapid as that produced by pentobarbital sodium. Because Cope and Hendrix repored fewer toxic sequelæ following the administration of 'delvinal' sodium, we also decided to investigate the value of the drug from this viewpoint.

It is often difficult to appraise the relative therapeutic value of all the barbiturates commonly employed. The response to these drugs may vary with each individual. Idiosyncrasy to small doses is encountered. The administration of large amounts of the barbiturates may often produce toxic effects or manifestations which differ from those obtained when small doses are employed.

However, in general, the therapeutic value of a bar-

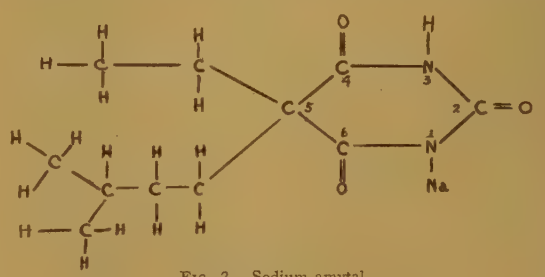

Fig. 2.—Sodium amytal.

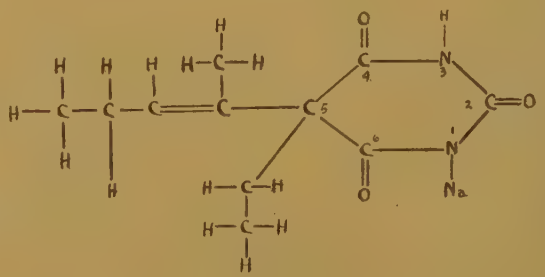

Fig. 3—Delvinal sodium.

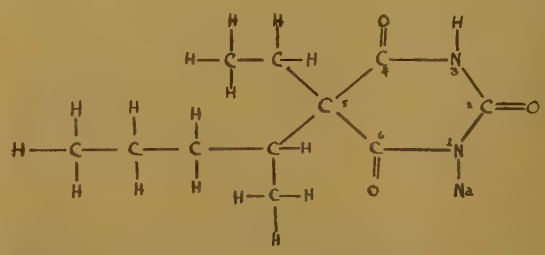

Fig. 4.—Pentobarbital sodium.

[1]'Delvinal' Sodium is Sharp and Dohme's trade mark for the above mentioned barbiturate.

biturate depends on the promptness, depth and duration of its action. In excited psychotic patients, because the drugs are often administered continuously for a prolonged period, the degree of divergence between the toxic and effective doses is another important criterion.

Accordingly, the action of these three drugs was investigated in the following manner:

A. The effects of a single administration were observed with regard to: 1, dosage employed; 2, time of onset of effects; 3, length of narcosis and sedation; 4, depth of narcosis and sedation; 5, physiological effects; 6, untoward manifestations.

B. The effects of continued administration were investigated with reference to: 1, production of untoward effects; 2, establishment of tolerance; 3, evaluation of their use in prolonged narcosis.

The fifty cases were divided into three groups, depending on the degree of excitement: 1, the agitated or hyperkinetic (twenty cases); 2, the excited or continually disturbed (twenty cases); 3, the severely excited or destructive (ten cases).

Procedure

For the purpose of evaluating the effects of a single sedative dose the drugs were administered in the following manner: Sodium amytal was given the first day. After a period of forty-eight hours had elapsed pentobarbital sodium was administered and then 'delvinal' sodium was given two days later. In this way it was possible to observe the reaction of the individual patient to a single effective dose of each drug.

Therefore, as a preliminary procedure in order to obtain the minimum effective dose, the initial dosage employed varied from one and one-half to three grains. In the more excited cases, one and one-half grains were added at half hourly intervals until the effective narcotic dose was reached. Later, in the more disturbed cases, larger amounts were administered so that it was not necessary to give those barbiturates in divided doses in most instances. Therefore, depending on the degree of excitement and the physical status, the patients received six, nine, twelve or fifteen grains initially. Subsequently, repeated doses were administered during one day. Thus, it was possible to arrive at an estimation of the maximum daily dose which could be employed without producing severe untoward effects and the amount necessary to continue the hypnotic effect during a twenty-four hour period.

In order to determine the effect of continued daily administration each patient received one of the drugs for one week or longer. A period of three days elapsed between the administration of each of these barbiturates during which the patient received no medication.

The patients were watched for the occurrence of untoward effects. Where those occurred smaller doses were subsequently employed following temporary discontinuance of the drug. Where tolerance occurred after continued administration larger doses of the individual barbiturate were employed. In ten cases the patient was kept in a state of deep narcosis for twenty-one hours daily. This procedure was continued from three to seven days with each barbiturate.

The drugs were administered orally in the hyperkinetic and disturbed cases. In the severely excited cases the barbiturates were administered rectally in some instances.

A. The Effects of Single Daily Doses

1. *Dosage.*—The data concerning the average dose of each of the barbiturates required to produce sedation and narcosis are indicated in Table 1. Allowing for varying conditions and sources of error the average effective dosage of pentobarbital sodium and 'delvinal' sodium required was less than that of sodium amytal. In general, the more excited the patient the greater the dosage required to induce narcosis.

Table I: Dosage

A. *Minimum Average Effective Dose*

	Sodium Amytal	'Delvinal' Sodium	Pentobarbital Sodium
Hyperkinetic	3.0 gr.	1.5-2 gr.	1.5 gr.

B. *Maximum Dosage Employed (without toxic effects)*

	Sodium Amytal	'Delvinal' Sodium	Pentobarbital Sodium
Severely disturbed	27 gr. (divided doses)	33 gr. (divided doses)	24 gr. (divided doses)

C. *Average Effective Sedative Dose*

	Sodium Amytal	'Delvinal' Sodium	Pentobarbital Sodium
Hyperkinetic	3.0 gr.	1.5 gr.	1.5 gr.
Excited	6 gr.	4.5 gr.	4.5 gr.
Severely excited	12 gr.	9.0 gr.	9.0 gr.

D. *Average Range of Narcotic Dose*

	Sodium Amytal	'Delvinal' Sodium	Pentobarbital Sodium
Hyperkinetic	3- 6 gr.	2- 4 gr.	2- 4 gr.
Excited	9-12 gr.	6- 9 gr.	6- 9 gr.
Severely excited	18-21 gr.	12-18 gr.	12-15 gr.

2. *Time of onset of effect.*—A comparison of the time required for sedation and narcosis to appear following the administration of single effective doses of each drug is listed in Table II. It was rather difficult to determine the exact time of onset of the sedative effect since it frequently almost coincided with the narcotic effect and there were other variable physical and psychic factors to be considered. As far as rapidity of sedation was concerned 'delvinal' sodium and pentobarbital sodium seemed almost equally effective. The induction time with sodium amytal was somewhat slower.

In regard to narcosis, except in the milder cases pentobarbital sodium produced the most rapid and sodium amytal the least rapid effects. The greater the degree of excitement, the longer was the time of onset of effect.

Table II: Time of Onset with Effective Dose

Sedative Effect

	Sodium Amytal	'Delvinal' Sodium	Pentobarbital Sodium
Hyperkinetic	45 minutes	10-15 minutes	15 minutes
Excited	60-90 minutes	30 minutes	25-30 minutes
Severely excited	2-4 hours	30-90 minutes	30-90 minutes

Narcotic Effect

	Sodium Amytal	'Delvinal' Sodium	Pentobarbital Sodium
Hyperkinetic	60 minutes	30 minutes	30 minutes
Excited	1½-2 hours	45-60 minutes	45 minutes
Severely excited	4 hours	2 hours	1½ hours

3. (a) *Duration of narcosis.*—The duration of narcosis following the administration of *effective* single doses of each of the three barbiturates is indicated in Table III. It will be noted that sodium amytal pro-

duces hypnosis of longest duration. When equal doses of each of the three drugs were administered sodium amytal produced the greatest length of narcosis in most cases (sixty-seven percent). In the remaining one-third of the cases, since sodium amytal was not as effective when equal doses were employed, the duration of sleep with 'delvinal' sodium was comparable with that of sodium amytal. In ten percent of the cases, the narcotic effect of 'delvinal' sodium lasted longer. Pentobarbital sodium did not produce as prolonged narcosis as either of the others. The duration of sleep did not necessarily depend on the dosage or the degree of excitement.

(b) *Length of sedative effect.*—In the disturbed and severely excited patients it was very difficult to determine the length of sedation independent of the duration of narcosis because of the occurrence of hangover reactions. However, in the hyperkinetic or agitated patients sodium amytal produced the longest period of sedation after the administration of a single effective dose. The average duration of diminished excitement with sodium amytal was eighteen hours with 'delvinal' sodium twelve hours and with pentobarbital sodium ten hours.

Table III: Range of Duration of Sleep with Effective Dose

	Sodium Amytal	'Delvinal' Sodium	Pentobarbital Sodium
Hyperkinetic	4-10 hours	5-7 hours	4-5 hours
Excited	2-10 hours	4-8 hours	2-6 hours
Severely excited	1-12 hours	3-10 hours	1-7 hours

4. *Depth of narcosis and sedation.*—Sodium amytal generally produced the greatest degree of narcosis. When equal doses were employed, in sixty percent of the cases sodium amytal produced the deepest hypnosis. The ordinary estimations for depth of narcosis were first employed. These included the ability to arouse the patient in response to external stimuli, state of deep reflexes, extent of pupillary dilation and contraction, respiratory depth and rate, and presence or absence of snoring. Using these criteria 'delvinal' sodium appeared to produce a deeper degree of hypnosis than pentobarbital sodium. However, these methods were found to be too subjective and yielded results that could not be accurately or quantitatively measured.

Accordingly, we attempted to confirm these impressions by a more objective method. In 1937, Reifenstein and Davidoff (12) varying the procedure of Myerson (13), noted that amphetamine sulphate acted as an antagonist to sodium amytal when seven and one-half to fifteen grains of the latter drug were administered. This analeptic effect was observed with regard to both the length and depth of narcosis. Later, they found that when more than fifteen grains were used the antagonism ceased and frequently a synergistic action occurred (14, 15, 16). In view of this antagonistic action of amphetamine sulphate with particular reference to the depth of narcosis produced by less than 15 grains of sodium amytal we felt that the analeptic effect of intravenous amphetamine sulphate could be used as a comparative index of the depth as well as length of narcosis produced by moderate doses of the three barbiturates. In six hyperkinetic patients, after obtaining deep hypnosis of sixty minutes' duration with nine to twelve grains of each of the barbiturates, we administered ten to twenty mg. of amphetamine sulphate intravenously. It was found that twenty mg. of amphetamine sulphate were sufficient to arouse two patients within five minutes. In four cases who received sodium amytal forty mg. were necessary and the time required to arouse the patient was fifteen minutes. In these four cases twenty mg. of amphetamine sulphate awakened the same individuals within five minutes when narcosis due to pentobarbital sodium or 'delvinal' sodium was obtained.

Table IV: Amphetamine Index

	Sodium Amytal 9 grains	'Delvinal' Sodium 9 grains	Pentobarbital Sodium 9 grains
Dosage of amphetamine	20-40 mg.	10-20 mg.	10-20 mg.
Awakening time	3-15 minutes	3-5 minutes	3-5 minutes

5. *Physiological manifestations.*—A slight fall in systolic blood pressure was observed in most cases following the administration of all three drugs. A fall of more than ten mm. of mercury was noted in fifteen cases after 'delvinal' sodium was employed; in ten cases after sodium amytal and in six cases following pentobarbital sodium. The three barbiturates caused an average slowing of the pulse rate of ten beats per minute.

There was an average fall of about one degree in the temperature. There was a decrease in the respiratory rate which was most marked when sodium amytal was used. This was present to a lesser extent following the administration of pentobarbital sodium and was rarely found after 'delvinal' sodium.

The basal metabolic rate was studied in ten hyperkinetic cases. All three drugs produced appreciably the same results, namely a fall of from three to ten points with equal doses. Vasomotor signs and skin eruptions were noted most frequently when sodium amytal was administered and to a lesser extent after the other two barbiturates.

Table V: Untoward Effects in Fifty Cases

	Sodium Amytal	'Delvinal' Sodium	Pentobarbital Sodium
Central nervous system	13	6	10
Cardiovascular (blood pressure)	3	6	3
Respiratory	8	1	4
Gastrointestinal	4	2	2
Genitourinary	2	1	2
Toxic sequelæ	13	7	15

6. *Untoward manifestations.*—These are listed in Table V according to the systems affected. This table also records the number of instances in which unfavorable sequelæ occurred following continued usage. In doses up to six grains few untoward effects were noted with either of the three barbiturates but in larger amounts sodium amytal caused untoward reactions including respiratory changes such as difficulty in breathing, the accumulation of mucus and marked slowing of rate. These manifestations were noted to a lesser degree and in fewer cases with pentobarbital sodium and only very occasionally with 'delvinal' sodium. The fall in systolic blood pressure resulting from a single dose was somewhat greater following the

administration of 'delvinal' sodium. A fall of twenty to thirty-five mm. was observed in six individuals but in no case was it considered cause for alarm.

Central nervous system reactions occurred most frequently with sodium amytal and least frequently with 'delvinal' sodium. These aftereffects included unsteadiness and incoordination, depression, preoccupation and restlessness. Exaggeration of the patient's excitement, nausea and anorexia, slowing of the pulse rate and decrease in temperature were also noted.

As indicated in Table IB, toxic effects were more prone to occur following the administration of relatively large amounts of pentobarbital sodium. Whereas, twenty-four grains of pentobarbital sodium given in divided doses caused unfavorable reactions, twenty-seven grains of sodium amytal and thirty-three grains of 'delvinal' sodium given in the same manner produced fewer toxic effects.

B. Effects of Continued Repeated Administrations

1. *Production of untoward effects.*—After repeated administration untoward manifestations of greater degree occurred. Continued use of large doses of sodium amytal produced untoward sequelæ such as excitement, grogginess and other hangover reactions in thirteen patients. The toxic effects produced by sodium amytal were mainly on the central nervous system and the respiratory tract. Untoward manifestations following the administration of 'delvinal' sodium were noted in seven cases. The continued use of pentobarbital sodium appeared to result in the occurrence of unfavorable sequelæ most often (fifteen in number).

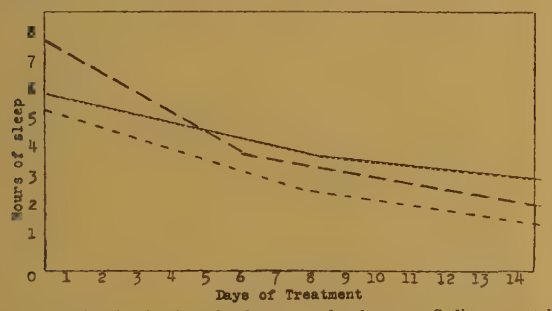

FIG. 5.—Graph showing development of tolerance. Sodium amytal —— —— ——, pentobarbital sodium - - -, 'delvinal' sodium .....

2. *Establishment of tolerance.*—The curves indicating the development of tolerance are represented in Fig. 5. The length of narcosis in hours following the daily administration of equal doses of each of the three drugs is indicated. It will be seen that tolerance develops most rapidly when sodium amytal is used, while the decrease in narcotic effect of 'delvinal' sodium is relatively less at the end of the two week period. Although sodium amytal produces narcosis of the greatest duration in the first days, 'delvinal' sodium appears to be at least as effective at the end of fourteen days.

3. *Evaluation of their use in prolonged narcosis.*—From the viewpoint of depth of narcosis, sodium amytal was the most effective but large doses were necessary and in increased amounts. From the viewpoint of duration, because of the tolerance developed to sodium amytal, after a week or two the length of narcosis obtained with 'delvinal' sodium was comparable to that produced by the former drug. Since pentobarbital sodium produces narcosis of shortest duration and was relatively more toxic in large doses, particularly after repeated administration, it did not lend itself as well to use in prolonged narcosis. Furthermore, its effect tends to decrease with repeated administration.

C. Evaluation of Results With Reference to Diagnostic Classification

In regard to this phase of the study, the cases were divided into those of psychogenic and of organic origin. The effects caused by the administration of these drugs varied with the mental and physical status of the patients, and it was often difficult to evaluate their relative merits in each psychosis.

In functional states, the psychoneurotic patients responded best while the manic depressive group reacted better than the schizophrenic reaction types. The psychoneurotic patients appeared to react somewhat better to the continued administration of 'delvinal' sodium than they did to the other two barbiturates. This advantageous response to 'delvinal' sodium was also noted in restless children with behavior disorders who were studied in another series.

'Delvinal' sodium appears to produce a more favorable action in hyperkinetic and excited patients of the manic depressive group and involutional psychoses than the other two barbiturates, although its superiority over sodium amytal cannot be definitely established as yet. Pentobarbital sodium appears to be least effective.

In severely excited cases of dementia præcox sodium amytal (14, 15, 16) still appears to be the drug of choice if not employed over too long a period of time. 'Delvinal' sodium is more effective than pentobarbital sodium.

In chronic organic conditions, such as arteriosclerosis or senile psychoses, the administration of a single dose of pentobarbital sodium appears to be an effective means of producing immediate sedation of a temporary character, since only a small amount of this drug is required. However, the other two barbiturates are preferable if continued administration is necessary. All three drugs must be administered with caution in this type of psychosis. Patients with cardiac lesions and hypotension must be watched carefully for the fall in blood pressure which may occur.

In acute infections and toxic conditions, particularly those of alcoholic origin, 'delvinal' sodium appears to exert the most favorable influence. Single doses of pentobarbital sodium are also effective, but the untoward effects which may occur following its administration in toxic conditions must be guarded against. Epileptics respond best to 'delvinal' sodium which is a valuable drug in the management of patients with convulsive disorders.

Finally, however, it should be borne in mind that some of the effects are dependent on individual variations in reaction to the drugs, so that any one person may tolerate or respond to one compound better than the other. For this reason and other reasons it is at times a good procedure to use these drugs in rotation or combination in order to obtain the optimum effect of each in a given required condition. However, when this is done, the patients must be watched carefully for toxic effects which at times occur when these drugs are used in combination or in sequence. This required, therefore, a judicious estimation and variation in the

dosage of each. This form of sedation is used as an adjuvant to other hospital procedures and psychotherapy.

Summary

The results of this investigation concerning the action of the three barbiturates may be summarized as follows:

A. *Effects of a single administration.*—1. In general, smaller doses of pentobarbital sodium and 'delvinal' sodium were required to produce sedation and narcosis. The severely excited cases required a slightly larger amount of 'delvinal' sodium than pentobarbital sodium.

2. Pentobarbital sodium and 'delvinal' sodium usually induce narcosis more rapidly than sodium amytal. In the more excited cases, pentobarbital sodium caused the most rapid onset.

3. Sodium amytal produced, in general, the greatest length and deepest narcosis. After 'delvinal' sodium was given the hypnotic state lasted longer and appeared to be somewhat deeper than after the administration of pentobarbital sodium.

4. Except for the fall in blood pressure, fewer untoward physiological effects and sequelæ were noted when 'delvinal' sodium was employed than when sodium amytal or pentobarbital was administered. The unpleasant sequelæ following a single moderate dose of sodium amytal were greater than those produced by pentobarbital sodium but large doses of the latter were more prone to cause toxic effects. Excitement and idiosyncrasy was encountered relatively less frequently and to a lesser degree after the administration of 'delvinal' sodium.

B. *Continued administration.*—1. After repeated administration of the three barbiturates unpleasant sequelæ produced by pentobarbital sodium tended to increase to a greater extent than those observed following the continued administration of sodium amytal. The least number of toxic effects were noted after continued administration of 'delvinal' sodium. Despite the tendency toward an initial fall in blood pressure following its ingestion, repeated exhibition with the drug did not continue to lower the blood pressure materially.

2. While untoward effects tended to increase more often after repeated administration of pentobarbital sodium, a relatively greater degree of tolerance was developed following continued usage of sodium amytal. 'Delvinal' sodium appeared to produce the least degree of tolerance.

3. Sodium amytal and 'delvinal' sodium are both useful in the production of continuous narcosis.

C. *Clinical applications.*—Since sodium amytal produces the greatest depth and length of narcosis it is effective in the production of prolonged or continuous hypnosis. In large doses it is of value in extremely disturbed patients, particularly those of the schizophrenic reaction type.

Pentobarbital sodium produces the most rapid onset of narcosis and relatively smaller amounts are necessary to produce sedation. It is of value in acute infectious conditions and chronic organic states. Hyperkinetic or agitated cases respond well.

'Delvinal' sodium is of value in acute toxic and infectious conditions; in convulsive disorders; in agitated patients and in psychoneurotics; in continuously disturbed cases, particularly of the manic depressive variety and in many severely excited patients. Since it produces relatively fewer toxic effects and sequelæ larger initial doses may be used. Tolerance to 'delvinal' sodium is not developed as rapidly. However, a few individuals did not react as well to 'delvinal' sodium as they did to the other two barbiturates. To some extent 'delvinal' sodium combines the advantages of both drugs and appears to occupy an intermediate position since the depth and duration of the sedation produced compared favorably with that following the administration of sodium amytal, while the rate of induction is almost as rapid as that produced by pentobarbital sodium. For this reason and because of the individual variations encountered it may be used in place of or in combination with the other two drugs. These barbiturates singly or in combination judiciously used are valuable adjuncts to other routine hospital procedures. They may be employed as a preliminary measure to or in conjunction with hydrotherapy and psychotherapy.

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SYRACUSE PSYCHOPATHIC HOSPITAL

Practical Therapeutics

A SIMPLE METHOD FOR REPEATED BLOCKING OF THE SYMPATHETIC GANGLIA IN AMBULATORY PATIENTS

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Philadelphia, Pa.

The rôle played by vessel spasm in peripheral vascular diseases has been appreciated for some time, but the work of Ochsner (1, 2) on acute phlebitis and its successful treatment by blockage of the sympathetic ganglia has reemphasized that rôle and suggested many new possibilities. Vessel spasm is the one factor in vascular diseases amenable to control, partial or complete.

Methods of combatting spasm are, 1, avoidance of spasm-producing stimuli; 2, overcoming of spasm already present. Among the weapons available for the accomplishment of this second end is the procedure of blocking the sympathetic ganglia and by so doing interrupting the path of contraction-producing stimuli.

During the past year we have been using this as a therapeutic measure to overcome the spasm attendant upon the more subacute and chronic peripheral vascular lesions, Buerger's disease, thrombophlebitis (subacute and chronic), and in some cases of arteriosclerosis. We also use it in "follow-up" treatment in cases of subsiding phlebitis which have been treated in the acute stage by sympathetic block. In so doing we have taken a standard technique and simplified it, and have kept the patient, ordinarily hospitalized, ambulatory. By these means we have been able to treat the above mentioned types of cases once or twice weekly with great economy, and have been able to prolong a spasm-combatting regime over weeks or months.

Some of the patients in our group would have been candidates for sympathectomy. This procedure is of great value, but it is one of a certain magnitude. In some patients it is contraindicated by other lesions, and occasionally it is only transiently helpful (3, 4). Repeated sympathetic block by injection is not offered as a substitute for sympathectomy, but in some cases it is hoped the prolonged relaxation of vessel walls will accomplish the same end, and if this end is not maintained after the sympathetic blockages are stopped then at least it has been demonstrated by therapeutic test what results may be expected if the sympathetic ganglia are surgically extirpated.

The present article is not offered as a report on the results of these studies but simply as a means of bringing this simple regime to the attention of those who might wish to use this same method of procedure in an obstinate group of conditions.

As mentioned before, all our patients are seen in the dispensary. Appropriate preliminary tests are made to determine whether each case is suitable for this form of treatment. If so, the patients report weekly or biweekly, receive their injection, and go home.

Since we encounter diseased lower extremities so much more often than upper ones we will limit ourselves here to a discussion of lumbar sympathetic block.

Table.—The table used may be of any kind which will hold the patient safely. One about the height of a hospital bed is satisfactory.

Position.—For lumbar injections the patient is placed on his side in the usual position for lumbar puncture, the back arching outward, the side to be injected being the upper one. A small pillow may be placed under the loin nearest the table, thus arching the spine away from the table and giving more space between the upper transverse processes. No draping is done.

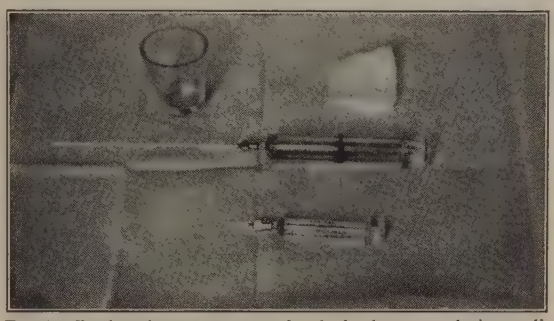

FIG. 1.—Total equipment necessary for the lumbar sympathetic ganglia injections.

Equipment.—The implements on our tray are kept at a minimum: syringes, needles, solutions, alcohol, sponges. There are two syringes, 2 cc. and 10 cc., and two needles, a small 24 gauge hypodermic needle and a special five inch or six inch, 21 gauge, flexible needle without a stylet, and two small glasses for solutions.

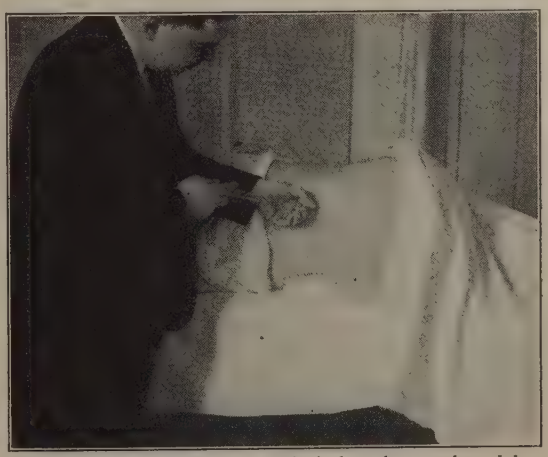

FIG. 2.—Patient in position. Skin wheals have been made and long needle is now being inserted.

Solutions.—Let us consider for a moment the kind of solutions available. They fall into two general groups: destructive, as, for example, alcohol; and nondestructive, as novocaine, one percent solution. We feel that it is desirable to use a nondestructive agent as long as possible, for two reasons: 1, the disease does not lie primarily in the sympathetic ganglia; 2, if there be improvement or recovery of the affected extremity, it is desirable to have all normal nervous pathways continuing to function.

Of the nondestructive agents one percent novocaine solution is the standard of choice. Its immediate effect is of short duration, but the reaction it initiates carries well beyond—sometimes for twenty-four to forty-eight hours. An analogous prolongation of effect is noted by other writers (5) after injecting novocaine locally.

FIG. 3.—A closer picture showing how the alcohol sponge, held about the needle, guides it through the skin yet maintains sterility.

For a more prolonged direct effect one percent novocaine in ten percent glucose has served us well. Another solution successfully used is nupercaine in oil (nupercaine HCL .025 gm. in 5 cc. oil of sweet almonds).

In certain instances we know that destructive agents, such as alcohol or phenol, are desirable and effective but our experience has purposely not included them.

Procedure

With the patient in position and the site bared, the operator notes and marks the crest of the ilium and cleanses the whole region with alcohol, seventy percent. He may then don sterile gloves, feel the spines of the lumbar vertebræ and make wheals of one percent novocaine 3.5 to 4 cm. above, approximately over the transverse processes of the next lower vertebra; or, as this is an inexact procedure at best, he may remain unsterile and place wheals at these sites by using the small sterile syringe and needle, not touching the prepared area with his hands, and simply estimating the points at which the injections should be made. This is done over the four lower lumbar transverse processes. With the wheals placed the 10 cc. syringe is filled with novocaine, one percent (standard procedure), and the long needle attached. The needle is steadied near its point by holding it with the fingers of the left hand (gloved or protected by an alcohol sponge if unsterile), while the syringe and needle are advanced in the usual way by the right hand. After the needle has punctured the skin all maneuvering is done with the syringe held in the right hand as the resistance offered by the skin is not encountered in the deeper tissues. It is aimed to strike the transverse process directly upon going in (though one may go right down to the vertebral body between the transverse processes if he wishes), then to point the needle toward the body of the vertebra as it is slid over the upper or lower edge of the transverse process. This procedure is well described by Labat (6), Ochsner (1, 2) and in the chapter on local anesthesia in Dean Lewis's *System of Surgery* (7).

Upon making contact with the vertebral body one edges forward on it till the needle slides off its anterolateral aspect into the retroperitoneal space. If a spinal nerve is struck on the way in, the patient feels a sharp, shooting pain along its distribution. A small amount of novocaine can be injected when and where this happens and the needle withdrawn to just underneath the skin surface. A new approach is then made. Frequently the transverse process is not found where it is expected and several exploratory sticks must be made (the needle not being withdrawn through the skin, however). If such exploration is done with the usual spinal puncture needle or any needle of a gauge around 18, the patient will have a very sore back later. The fine gauge of the needle we use leaves practically no soreness. Again, if one takes the trouble to insert an ordinary lumbar puncture needle in a cadaver of average build he will see that the retroperitoneal space where the sympathetic ganglia lie may be just a little out of reach. The extra length of our needle obviates this possibility. Its relatively small bore has another advantage. When a vessel is entered, as has occurred occasionally with us, the needle may be withdrawn without fear of a slow ooze following; certainly our patients have shown no ill effects. The flexibility of our needle also lessens the possibility of any breaking-off.

A word about the number of sites to be injected. First it is obvious, of course, that one doesn't hope to strike a ganglion directly; he hopes to inject the fluid in the retroperitoneal space in the immediate vicinity of the ganglion and inject sufficient amount of solution so that the nerve tissue will be well bathed with it. Therefore, if one can feel that he has entered this space properly at two sites he may inject the desired dosage and it will spread up and down as well as if it had been injected at four sites—the number advocated by Ochsner. We have entered the space two vertebræ below an injection site and have been able to aspirate the solution injected above.

Present Series

In a group of twenty-five patients in whom this work is being done, over one hundred and fifty treatments (two to four injections each) have been given with no mortality. One patient had to rest in bed a few hours after one injection, complaining of severe loin pain. Three others complained of some soreness in the back but not enough to stop them from working. One man developed herpes zoster at the level of the injections a week after one treatment. No local infections occurred at the sites of skin puncture.

All patients are willing to report to the clinic for their regular injections. They lose little time from their work—only that required to come to the hospital.

Summary

Herein is described a simple procedure for doing repeated blockages of the lumbar sympathetic ganglia on ambulatory patients. It is applicable to the study and treatment of all those peripheral vascular conditions where spasm is a factor.

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4116 North Broad Street

News Items

Friday Afternoon Lectures.—The seventh lecture of the sixteenth series of Friday afternoon lectures will be given at the New York Academy of Medicine, on January 9th, by Dr. Frank E. Adair, attending surgeon, Memorial Hospital, New York. His subject will be Evaluation of Methods of Treating Cancer of the Female Breast.

Historical Medicine.—A combined meeting of the Section of Historical and Cultural Medicine and the Section of Pediatrics of the New York Academy of Medicine will be held on Thursday evening, January 8th. Dr. Ernest Caulfield, of Hartford, Conn., will read a paper on the throat distemper of 1735-1740 and Dr. Bret Ratner will read a paper on the evolution of our present knowledge of hypersensitiveness. The discussion will be opened by Dr. Ulrich Friedemann and Dr. Bela Schick.

Venereal Disease Problems in Army and Civilian Defense Areas.—A meeting will be held at the Faculty Club, Columbia University, 117th Street and Morningside Drive, on Wednesday evening, January 7th, to discuss the subject of venereal disease problems in army and civilian defense areas. The speakers will be: Dr. Roger E. Heering, U. S. Public Health Service, Colonel H. Marsh, Medical Corps, U. S. Army, and Dr. Ernst P. Boas, of New York, who will preside as chairman. The presentations will be short and concise and opportunity will be afforded for discussion.

Medical Schools Reduce Course to Three Years.—Dr. Willard C. Rappleye, commissioner of hospitals and national chairman of the preparedness committee of the Association of American Medical Colleges, has announced that seventy-six recognized medical schools throughout the United States have adopted a plan to reduce the medical curriculum from four to three years. Under this plan first-year medical students will begin their courses about July 1st this year instead of in September and October. Vacations, primarily the summer vacations, will be cut to a minimum, so that medical schools will operate on a twelve-month calendar year. The acceleration of the medical course will help to provide more physicians for the military and civilian needs of the country. Dr. Rappleye estimated that five thousand more trained physicians would be graduated in the next three years under this plan than under the present system.

Annual Meeting of the Academy of Medicine.—The annual meeting of the New York Academy of Medicine will be held Thursday evening, January 8th. The program will be presented under the joint sponsorship of the New York Academy of Medicine, its Section of Surgery, and the New York Surgical Society. The topic for discussion will be war wounds. The following papers will be presented: Determining factors in the end-results following war wounds and compound fractures, by H. Winnett Orr, chief surgeon, Nebraska Orthopedic Hospital; the treatment of head injuries, by James C. White, assistant professor of surgery, Harvard Medical School.

Pennsylvania Health Institute.—The second Pennsylvania Health Institute will be held at the Penn-Harris Hotel, Harrisburg, January 14, 15, and 16, 1942. This institute is sponsored by the Pennsylvania Department of Health with the cooperation of other state and national departments and collaborating organizations, which include the United States Public Health Service, the American Medical Association, and the Medical Society of the State of Pennsylvania. Lecures are open to all who are interested in public health and those actively engaged in the work. For complete programs and further information concerning the institute, address Mrs. Edna M. Kech, Director, Division of Health Education, Department of Health, Harrisburg, Pa.

Academy of Medicine Election.—The annual election of officers of the New York Academy of Medicine was held on December 4th. Dr. Robert F. Loeb was elected vice-president for three years; Dr. Roderick V. Grace was elected treasurer for three years; Drs. Currier McEwen and Walter L. Niles were elected trustees for five years; Dr. Samuel W. Lambert was elected consultant to the committee on library; Drs. Claude E. Heaton, Rustin McIntosh and Ramsay Spillman were elected to the committee on library for three years; and Drs. Cornelius G. Dyke, Alfred E. Fischer, Virginius B. Hirst and Russel H. Patterson were elected to the committee on admission for three years. Dr. Malcolm Goodrich is president of the Academy.

Postgraduate Course in Treatment of Venereal Disease.—The Bureau of Social Hygiene of the Health Department of the City of New York, announces the organization of a short, practical course in the diagnosis and treatment of syphilis and gonorrhea and other genital infectious diseases in its own clinics. The salient features in the method of instruction are clinical teaching, frequent demonstrations, very short didactic lectures, and thorough office laboratory training. A limited number of students can be accommodated simultaneously. Preference will be given to young physicians, who have had internships in general hospitals. The time will be determined on the basis of individual interview with the applicant. Physicians who enroll for the course will be expected to attend punctually and regularly. At the successful completion of the course a certificate will be issued attesting to the fact that such physicians have undergone the training as described above. Students will be selected after a personal interview with the director of the Bureau of Social Hygiene. Application blanks may be secured from the Bureau of Social Hygiene, Department of Health, 125 Worth Street, New York City.

French Speaking Medical Society.—The following officers were elected at a recent meeting of the French Speaking Medical Society of New York: Dr. Henry Rosenberg, president; Dr. Marcel Pahmer, vice-president; Dr. Bluma T. Feldman, 111 East Sixty-first Street, secretary.

Medical Supplies for San Francisco.—At the request of the Mayor of San Francisco, two complete medical catastrophe units were shipped to the west coast on December 15th, by the Medical and Surgical Relief Committee of America, 420 Lexington Avenue, N. Y. The shipment was made in keeping with the committee's new policy of concentrating future activities on furnishing aid to American hospitals and other organizations where they are required for emergency use. Arrangements are now under way to send similar first aid medical and surgical units to hospitals in New York State, South Carolina, Maine and Vermont, in response to urgent requests.

Lectures on Emergency Medical Service.—The New York Academy of Medicine and the Medical Society of the County of New York are cooperating with the Emergency Medical Service for Manhattan in a series of lectures and demonstrations on emergency medical service based on the course in advanced first aid for air raid victims as prepared by the American Red Cross and the National Office for Civilian Defense. The first two lectures in this series were held on December 22d and 29th, and the third was given at the Academy of Medicine on Monday afternoon, January 5th. At this meeting Dr. Frederick W. Bancroft, president of the New York Surgical Society, discussed emergency care of abdominal injuries, head and chest injuries, and burns. On Monday evening, January 12th, Dr. Lawrence M. Thompson, chief of the First Aid Division of the American Red Cross, will discuss emergency care of wounds, hemorrhage, and shock.

Mississippi Valley Medical Society.—At the annual meeting of the board of directors of the Mississippi Valley Medical Society, held on November 23d, the following officers were elected for 1942: President-elect, Dr. E. M. Myers, Woodward, Iowa, past-president of the Iowa State Medical Society; first vice-president, Dr. F. E. Sultzman, Hannibal, Mo.; second vice-president, Dr. F. Garm Norbury, Jacksonville, Ill.; third vice-president, Dr. H. L. Van Winkle, Cedar Rapids, Ia.; secretary-treasurer, Dr. Harold Swanberg, Quincy, Ill. (reelected). Dr. Dan G. Stine, Columbia, Mo., professor of medicine, University of Missouri School of Medicine, is president of the society for 1942.

The following were elected to membership on the Board of Directors: For Illinois: Dr. N. C. Barwasser, Moline; Dr. D. A. Bennett Canton; Dr. M. E. Bitter, Quincy; Dr. N. S. Davis, III, Chicago; Dr. S. R. Hoover, Quincy; Dr. Linden Seed, Chicago; Dr. G. A. Sihler, Jr., Litchfield. For Missouri: Dr. W. A. Bloom, Fayette; Dr. E. L. Dorsett, St. Louis; Dr. Frank J. Tainter, St. Louis. For Iowa: Dr. Felix A. Hennessy, Calmar; Dr. J. H. Peck, Oakdale; Dr. J. H. Randall, Iowa City.

The society will conduct another essay contest next year, and will hold its eighth annual meeting at Quincy, Ill., September 30 and October 1, 2, 1942. The Mississippi Valley Medical Editors' Association will hold its second annual meeting at Quincy on Sept. 30th.

Personal.—Dr. Tom Douglas Spies, of the School of Medicine of the University of Cincinnati and Hillman Hospital, Birmingham, Ala., was given the award of distinction of the American Pharmaceutical Manufacturer's Association at a meeting held in Washington, on December 8th. The award was made in recognition of Dr. Spies' work with nicotinic acid.

Dr. Evarts A. Graham, professor of surgery, Washington University, St. Louis, has been awarded the Lister Medal for 1942, in recognition of his distinguished contributions to surgical science.

Dr. Joseph Francis McCarthy, professor of urology at the College of Physicians and Surgeons, Columbia University, has been honored by having the new wing of the Barros Luco Hospital at Santiago, Chile, named for him. Dr. McCarthy is director of the department of urology of the New York Polyclinic Medical School and Hospital.

Dr. C. H. Kellaway, director of the John and Eliza Hall Institute, Melbourne, Australia, is visiting in the United States.

Dr. Arno B. Luckhardt, professor of physiology at the School of Medicine of the University of Chicago, delivered a lecture at the Michael Reese Hospital, Chicago, on December 10th, his subject being Dr. William Beaumont and the Medical Epic of the Northwest Territory. The lecture was delivered under the auspices of the Robert Sonnenschein Study Group for Medical History.

Dr. Walter L. Palmer, professor of medicine, University of Chicago School of Medicine, delivered the fifty-fourth Thomas Dent Mütter Lecture before the College of Physicians of Philadelphia, on December 3. His subject was the Rôle of Acid Gastric Juice in Gastric and Duodenal Ulceration.

George D. Beal, Ph.D., assistant director of the Mellon Institute for Industrial Research, Pittsburgh, Pa., has been awarded the Remington Medal of the American Pharmaceutical Association for 1941.

Dr. Gerald R. Jamieson has resigned as medical director of the Payne Whitney Psychiatric Clinic, New York, and will be succeeded by Dr. Thomas A. C. Rennie, formerly assistant psychiatrist at Johns Hopkins Hospital, Baltimore. Dr. Jamieson will enter private practice.

Edward Kass, M. Scherago and R. H. Weaver, all of the department of bacteriology of the University of Kentucky, have been awarded the King Prize of $50 for the best paper presented at the 1941 meeting of the Kentucky Academy of Science, according to *Science*. The award was made in recognition of their work on enzymic purification of antitoxins.

Dr. Alvah H. Gordon, professor emeritus of medicine at McGill University, Montreal, delivered the first in the series of Robert Dawson Evans Memorial Lectures in Boston, on November 21st. His subject was Bone Changes in Certain Medical Diseases.

Dr. James B. Murphy of the Rockefeller Institute for Medical Research of New York, delivered the third Barnard Hospital lecture of the St. Louis Medical Society on November 18th. The subject of his lecture was An Analysis of the Trends in Cancer Research.

T. D. Kroner, assistant professor of bacteriology, Colorado State College, Denver, has been appointed assistant professor of bacteriology at the Louisiana State University, New Orleans.

SOUTHERN CALIFORNIA MEDICINE

JOHN WILLIAM SHUMAN, SR.
Los Angeles, Calif.

(*Continued from November 19, 1941, page 378*)

Women Doctors

When the Toland Medical School became a part of the University of California, women were given their first opportunity to study white men's medicine in California. Doctor Emma L. Merritt wrote (*California and Western Medicine,* May, 1925) concerning the history of women in medicine covering a period of the first fifty years. Here is an abstract:

"You of the present day do not realize the struggles and hardships undergone by women who first tried to get a proper medical education in California. To have lived in the time of those of us who are over sixty has been like living in a dream, so unreal and extraordinary have been the changes that we have seen.

"The struggle to practice medicine was only a branch of the great struggle for the general enfranchisement of women. To get even a high education, with no thought of making use of it outside the home circle, was considered unwomanly, and she who possessed any degree of learning was ridiculed as being a bluestocking.

"I am old enough to have had the privilege of knowing the first woman to graduate from a California medical college and the first to enter the San Francisco Medical Society—Dr. Lucy Maria Field Wanzer.

"One year after Doctor Toland had donated the Toland Medical College to the University of California, Doctor Wanzer and her friend, Miss Mary Fraser McDonald, applied for admission. They had two friends to advise them, Doctor John Swift and Rev. Horatio Stebbins, regents of the university, who instructed the two women to say nothing, but first to apply to the medical department, and if they were turned down, then to apply to the regents. They applied and were refused. They then went to the regents, who referred the matter to their attorney, who looked it up and said there was no law against it. As the organic law of the state was that both sexes were to be educated if they so desired in the university, and as Toland College was an integral part of the university, the two women could not be kept out. Four months were consumed in arriving at this decision.

"At thirty-three Doctor Wanzer stood alone (for Miss McDonald deserted her for a husband) the one woman in the whole state of California demanding admittance to Toland College.

"Undisturbed she went in prepared for trouble, the dream of her life was to be realized. Some of the professors welcomed her, but the dean told the class that a woman was going to appear and for them to haze her so she could not say. 'Of course,' he said, 'she will complain. We will tell her that we are very sorry, but we cannot lecture to two classes. With just one woman we can make short work of it.'

"The first day she spent from eight to twelve o'clock going through the hospital. Before she got through, some of the boys were edging away and pulling other boys to one side, so she could see the patients. But some of the 'lost links' were trying to carry out the dean's instructions.

"The first clinic was a medical one by Doctor Bates who had the southern soft way about him. He made a nice speech when she entered which gave her some standing with some of the boys. Then came Toland's clinic. She followed him through the wards finally arriving in the syphilitic and gonorrheal ward. He, thinking that perhaps this was too strenuous and that she would not care to go on, asked her if she did not wish to be excused, but she replied, 'Oh, yes, doctor; I know the work is hard, but I am here to see everything, otherwise I would not be fit to be a medical student.'

"Next she attended Martinache's eye ward. Doctor Martinache told her that a woman had no business studying medicine and that if she did so she ought to have her ovaries removed! The lady replied, 'If that is so, then the men students ought to have their testicles removed!'

"Beverly Cole, who had the obstetrical clinic, sent for her and told her he would not like to place her in an unpleasant position, but that he could not lecture to a mixed class without making it very embarrassing to her; and as he was about to commence his course, he would excuse her. She told him, 'I wish to be excused from nothing.' He was pleased and said, 'If you want a preceptor, I am perfectly willing to be the same to you.' She asked, 'What will be the expense?' He answered, 'Nothing, and I can give you advantages that I can not give a young man.' She accepted and when there was no lecture going on she was in his office. Sometimes he would give her the most trying things to do and would think it a joke. No matter what it was she did it.

"Once when she was dissecting for hernia the boys decided it was time to haze her. The next morning when she went to the dissecting room there was an unusual number of students around. The cadaver had been arranged in a manner which the men thought would shock her very much but she took no notice of it and went on working as if nothing had happened.

"Later one of the students had a birthday. His classmates made him so drunk that he fell asleep; then they carried him, after dark, into the dissecting room and tied him on to one of the tables. Near midnight he woke up and screamed so that the whole neighborhood was aroused and alarmed. Such a commotion was created that the faculty had to take note of it. Every student was summoned, the woman student among the number. She stated when questioned that she was not a detective and her fellow students afterward said they thought every woman would blab, until they had met her. That incident made a comradeship between them and by the time she graduated (1876) there was not one who would not do anything for her.

"When Doctor Cole presented her name to the county medical society of San Francisco a movement

was set on foot to blackball her and she was privately advised to withdraw her application. She replied, 'My name stands so blackball me if you will.' Her name went through, the first woman ever presented. Only three years prior Doctor Charlotte Blake Brown had applied for admission, but her name was withdrawn before the time came for voting.

"Doctor Wanzer set up an office over a plumbing shop at 130 Geary Street, opposite where The City of Paris is now. She had six rooms for about forty-five dollars a month, and rented out three for fifteen, with the understanding that the tenants must clean up her office and answer all telephone calls that might come in when she was absent.

"When she graduated, the local papers were full of nonsense, ridicule and praise concerning her, but her friends told her she would make a great success and that they would help her. But very few at first sent other than their servant girls. Soon as the mistresses found their servant girls did not die, they came themselves for her professional care.

"Twenty-two years after her graduation, Toland College was moved to its present site on Parnassus Avenue, now the Medical Center. At the dedication, Doctor Wanzer was amazed at the number of women studying medicine in the building—twenty-two—and each year they had been graduating them, for twenty-two years."

William Musgrave, editor of *California and Western Medicine,* when editing the foregoing in 1925, penned this:

"Women in medicine have come into their own in California to a degree probably not equalled elsewhere. There cannot be, of course, a sex line in the practice of medicine, and all fair-minded persons have long since recognized that fact. That it is a fact in practice, at least in California, was well demonstrated when the American Medical Association was our guest. For that great convention the women physicians themselves requested to serve on mixed committees rather than have separate committees.

"It is interesting and signficant in medical progress that more than three score women physicians recently gathered at the banquet table to eulogize Lucy Maria Field Wanzer, one of the pioneer women physicians. It was at this banquet that Doctor Merritt presented the following bit of history."

Charlotte A. Blake Brown, M.D.

"This little lady was not daunted by the men doctors refusing her medical education in California. She left her home in Napa, and went east and graduated from the Woman's Medical College in Philadelphia (1874). She then returned to her native state and began practice in San Francisco (1875). She aided in starting the Children's Hospital and training school for nurses (1880), first on the coast; and the renaming and incorporation of the Pacific Dispensary for women and children (1905). She had for her women associates Martha Bucknall, Sarah Browne, Elizabeth A. Follansbee, Emma S. Merritt and C. Annette Buckel.

"Doctor Follansbee later became professor of pediatrics in the Los Angeles Medical College, holding the position until that school closed. Of her, Doctor Adelaide Brown wrote (*California and Western Medicine,* May, 1925): 'She was a friendly critic, a devoted friend, and of herself thought least of all. She was never rich in this world's goods, being too busy to keep books. She was an idealist holding the torch high.'

"When Annette Buckel died (California, 1877-1904), Doctor H. Gibbons, Sr. wrote of her, 'To few souls has it been given to live to see the attainment, personally and professionally of their hearts' dearest wishes.' "

Medical Legislation

When white physicians came to California they found the Indian doctors practicing under laws which had been the outgrowth of age-old customs. The same held true concerning these white Spanish doctors and their medical practice arts. The rules and regulations governing medical practice in those ancient days seem weak and inefficient as compared to California laws of today.

We have seen that John Marsh was licensed by the Mexican government simply upon presentation of a literary diploma from Harvard and the registering of the same. The provincial Governor had only to set his seal upon a doctor's diploma, for which service a fee was paid by the doctor.

When physicians became more numerous in California, special laws regarding them were thought necessary, the first being in 1850. January of that year saw the founding of the first medical society in the state, the Los Angeles Faculty of Medicine. Northern California organized a similar society in Sacramento the following month of May.

Regular physicians have always worked arduously to raise the standard of medical practice by legislative enactment, not only as a protection to themselves but also of the public. This attitude has been extraordinarily true of the State of California; whether the efforts have borne fruit or not, let the written records tell.

Although prior to 1876 the state took no special part in regulating medical practice there was much free discussion and attempts made to regulate the healing art by regular physicians. Most of these doctors were members of regular medical societies. The control of medical practice acts was in the hands of the medical fraternity. Any one who thought he was a doctor could hang up a shingle in those days and apply himself to healing. If his therapeutics were sufficiently successful he won out, if woefully deficient, he was erased.

No doubt a large number of undereducated and underbred men took up "doctoring", but the better trained practitioners were not jealous of them because they did not have to be. It is true, is now and ever will be, that the real physicians saw unnecessary disabilities, deformities, and deaths resulting from bad treatment received at the hands of the fake doctors. On account of this the medical meetings of the regular physicians were taken up with the discussion of ways and means of limiting the right to practice medicine to regular trained physicians. Similar conditions exist today.

(To be continued)

It is recorded that a famous Danish surgeon offered to furnish a volume of his mistakes to the International Technical Surgeons. He thought his errors would be more instructive than a report of his successful procedures.—Sims' *Connotations.*

Book Reviews

Endocrinology

Essentials of Endocrinology. By ARTHUR GROLLMAN, Ph.D., M.D. With seventy-four illustrations. Philadelphia: J. B. Lippincott Company, 1941. Pp. 496. Price $6.00.

This book brings together the vast subject matter dealing with hormones. Enough is given to be helpful in everyday practice but academic theories and fanciful assumptions have been judiciously omitted. So many unwarranted procedures have emerged from insecure foundations that the author has veered towards experimentally established facts in order to place the subject on a scientific basis. Since endocrinology is based on observation of human disease, the clinical material is well incorporated into the body of experimental science. Unfortunately, the didactic method of presenting the clinical and therapeutic procedures is not always in accordance with actual practice. Endocrine patients behave differently than experimental animals. Nevertheless, the whole field is covered completely, simply and practically for the benefit of the practitioner. The maze of commercial endocrine products is so well clarified that it becomes a simple matter to determine the relative merits of products. The most striking parts of the book are those devoted to the principles of endocrinology. When these are understood the ramifications of practice in the long run must be adapted to the individual patient.

Arthritis

Arthritis in Modern Practice. The Diagnosis and Management of Rheumatic and Allied Conditions. By OTTO STEINBROCKER, B.S., M.D., assistant attending physician and chief, Arthritis Clinic, Bellevue Hospital, Fourth Medical Division, New York City. With chapters on painful feet, posture and exercises, splints and supports, manipulative treatment and operations and surgical procedures, by JOHN G. KUHNS, A.B., M.D., F.A.C.S., chief of the orthopedic and surgical service, Robert Breck Brigham Hospital; assistant visiting orthopedic surgeon, Boston Children's Hospital. Illustrated. Philadelphia and London: W. B. Saunders Company, 1941. Pp. 606. Price $8.00.

From the low ebb of interest hitherto shown by the medical profession in chronic arthritis and rheumatoid conditions a very definite change of attitude has taken place in recent years. National and international committees and governmental authorities have made a painstaking study of this large group of disabling conditions and special clinics have been inaugurated for their clinical study and treatment. Corresponding with this widespread interest a number of monographs begin to appear in an effort to give information on the newer phases of the manifold diagnostic and therapeutic procedures established and constantly being augmented. These volumes perform a useful service because much of their material cannot be found in the older standard textbooks. Their ultimate value, however, depends on the background and experience of their authors. Steinbrocker's volume presents the problem in twenty-five chapters, five of which, those on painful feet, posture and exercises, splints and supports, manipulative treatment, operations and surgical procedures are contributed by Dr. John G. Kuhns. In Dr. Steinbrocker's chapters, ten are devoted to strictly arthritic conditions, four to other rheumatic conditions and four to diagnostic and therapeutic procedures.

Because of the wide scope of the conditions included, the volume becomes a minor encyclopedia with some of the material spread quite thin. It is at times unbalanced as evidenced by the devoting of sixty-eight pages to a chapter on local and regional analgesic injections—evidently a pet measure of the author—and only seven pages to a chapter on physical therapy which is admittedly the oldest and most dependable standby in the local as well as in the constitutional management of these conditions. Many useful tables and three hundred and twenty-one illustrations liven up the text. Steinbrocker's volume will play an important part in spreading information about the diagnosis and management of rheumatic and allied conditions.

Personality

Intelligence, Power and Personality. By GEORGE CRILE, author of *The Bipolar Theory of Living Processes* and *The Phenomena of Life.* Edited by Grace Crile. New York, London: Whittlesey House, McGraw-Hill Book Company, Inc., 1941. Pp. 347. Price $3.00.

Anything that Crile writes is interesting. This new book is more than interesting. The title does not do full justice to the book.

Crile always uses a biological approach in his attempt to shed light on scientific matters. This, we feel, is the soundest approach. In this book, Crile goes a step further and he evolves a not too dogmatic philosophy which has a fascinating appeal. Some people may resent the fact that he tries to arrive at problems of personality through his careful observances of animal life. We, however, agree with Crile and feel that this approach is highly justifiable.

While the book is profound and stimulating, nevertheless, it contains plenty of human interest, for Crile writes simply of his own experiences in hunting, but one is delighted by the careful observations that he makes with the eye of a true scientist. Of course, Crile does not neglect to include man in his studies, and when he does that, he includes a lot; and while he may overemphasize the glandular relationship of man to his personality and behavior, we ourselves are inclined to be biased in the same direction.

This is a book which we heartily recommend and which we are certain no one will regret reading.

Diseases of the Eye

Manual of the Diseases of the Eye For Students and General Practitioners. By CHARLES H. MAY, M.D. Consulting Ophthalmologist to Bellevue, Mt. Sinai and French Hospitals, New York; Formerly Chief of Clinic and Instructor in Ophthalmology, Medical Department of Columbia University, and director of the Eye Service of Bellevue Hospital, New York; with the assistance of CHARLES A. PERERA, M.D., Instructor in Ophthalmology, College of Physicians and Surgeons, Medical Department of Columbia University. With 387 illustrations including thirty-two plates, with ninety-three colored figures. Baltimore: William Wood & Company, 1941. Pp. 519. Price, $4.00.

This classic is familiar to every student and physician and presents a concise systematic manual saying enough but not too much about every aspect of the field. The restriction in size of the book has been accomplished by omitting detailed and lengthy accounts of theory as well as of rare eye conditions. It is well illustrated for elucidation of the text and makes reading relatively easy. There are plates clarifying testing color perception. In view of the rôle of eye disorders in military service, the ocular requirements for admission are especially pertinent.

Medical Milestones

Digitalis in Medical History

In the year 1785 was published a small volume entitled *An Account of the Foxglove, etc.* The writer was William Withering of Birmingham, England. The book recorded the results of ten years of labor on the part of the author investigating and experimenting with both the noxious and the therapeutic properties of foxglove. His researches came about through his having been asked for his opinion about an ancient family prescription for treating dropsy. An old woman in Shropshire, it had been demonstrated, had been able to bring about cures in cases where regular physicians had completely failed. Withering was an expert botanist, so it was not long before his experiments assured him that the efficacy of this primitive "cure" was due to the fact that it contained a concoction of foxglove. The little book that Withering published about the properties of this plant and their application to medical practice has been called a classic of clinical investigation. Results of the treatment of 163 cases are given. Emphasis is laid upon both the emetic and purgative properties of foxglove, as well as upon its toxic manifestations. The summary given by him of its use a century and a half ago could stand today. Withering concludes this summary as follows: "Let the medicine therefore be given in the doses and the intervals mentioned above; let it be continued until it either acts on the kidneys, the stomach, the pulse, or the bowels; let it be stopped upon the first appearance of any one of these effects." He advises extreme caution in the use of large doses of the drug, advocating it for cardiac decompensation, and for its sedative action in cases of auricular fibrillation. He realized that, in full doses, it slows the heart, even to the point of sometimes causing complete heart block.

History of Use

Although the modern development of the use of digitalis is closely associated with the name of Withering, it had been discovered that the plant had medicinal properties many centuries before his birth. Dioscorides describes the "ephemerum" in such a way that we are led to believe it was either the foxglove itself or a plant very closely related to it. Galen knew and used a similar plant, and physicians of the eleventh century speak of such an herb. However, the first accurate and unmistakable description of foxglove, and also its name, we owe to one of the pioneer fathers of modern scientific botany, the Bavarian, Leonhard Fuchs, who christened the plant digitalis from its German name, *Fingerhut*, given it because of the resemblance of its flowers to thimbles. Fuchs, in his *De Historia Stirpium* published in 1542, calls the attention of physicians to the medicinal properties of digitalis, recommending it especially for dropsy, to relieve swelling of the liver and other internal organs, and to bring on the menstrual flow. In spite of some continental usage of the drug in accordance with Fuchs's recommendations, it did not attain widespread favor with the medical profession for some time. However, the grandames and other uneducated "healers" continued to employ it in their work, using it as often wrongly as rightly. Probably the most pertinent reference during this period to the "vertues" of digitalis was from the pen of the herbalist, John Parkinson, who in 1640 recommended it internally for epilepsy and externally for scrofula.

But in 1710 foxglove began to come into its own. William Salmon in the British *Herbal* assigns many marvellous qualities to the drug, advising its use for treatment of tuberculosis, but with caution because it "produces weakness, induces vomiting, and purges; it cleans the body from top to bottom and thereby rids it of tenacious humours." It is described as "sulphureous" and saline, aperitive, abstersive, astringent, digestive and vulnerary, pectoral, hepatic and arthritic, emetic, cathartic and analeptic. Preparations of the drug included "a liquid juice"; an essence; a syrup; a decoction or infusion; an ointment or balsam; and a cataplasm.

In 1744 digitalis appeared first in the Edinburgh Pharmacopoeia, in the Paris Pharmacopoeia in 1748, and in that of Württenberg in 1754. In 1748 Salerne published his famous report on experiments with digitalis upon turkeys, with extremely toxic effects. This unfavorable report checked to a considerable extent the use of digitalis by the medical profession except as a salve to reduce swellings. However, its emetic and purgative values were not completely forgotten. Its usage was at this stage when Withering appeared and began his researches that led to its final reinstatement in good standing as a therapeutic drug. He communicated his findings to the well known physicians of his day, and presented a report to the Medical Society of Edinburgh, with the result that in 1783 digitalis was replaced in the Edinburgh Pharmacopoeia. Soon after the publication of Withering's *Account of Foxglove* many enthusiastic testimonials to its successful use began to appear, with, of course the usual number of disparagers, among whom was Hahnemann. Among physicians enthusiastic about its use were John Ferriar, Drake, Beddoes and Fowler.

However, because the doctors of the day were lacking in powers of accurate observation and discrimination, and in spite of the cautions and prescriptions in its use emphasized by Withering, the use of digitalis therapy, judged solely by its obvious effects upon symptoms and without regard to the nature of the disease being treated, was doomed through frequent misuse. But in the early nineteenth century, before an accurate understanding of the heart and its action had been acquired, such men as Kreysig, Richter, Graumiller and Hufeland began to advocate once more the use of digitalis, with Corvisart and Laennec opposing them, with the final result that once more misuse and confusion reigned triumphant.

Digitalis Comes Into Its Own

It was not until the mid-nineteenth century, when physiology became finally an accurate science, that digitalis therapy was placed upon a sound basis. The German physiologist, Franke, recognized the effect of the vagus on heart action and so realized the true nature of the sedative action of digitalis. In France, Debreyne, a monk with medical training, experimented clinically with the drug, especially in cases of dropsy. In 1844, Homolle and Quevenne discovered the powerful active principle of amorphous digitalin, but as before misuse again made digitalis unpopular

with the profession. But a step in progress came in 1868 when Nativelle announced crystalline digitalis. During this period it was the physiologists mainly, not the doctors, who busied themselves with learning about digitalis.

It was not until the turn of the present century that, with interest renewed in pharmacology, experimenters throughout the civilized world turned their attention once more to the properties of digitalis. Among these men were Cushny, Cloetta, Straub, Wyndhaus, Weese, Stolle, and, in this country, Hatcher, Brody, Eggleston, Soma Weiss and others, all of whom have added to our knowledge of the standardization and the toxicity of the drug.

Even today our knowledge of digitalis, by no means complete, calls for more research, more experimentation, and a much fuller understanding of indications and contraindications for therapeutic application before the final status of digitalis as a medicine can be definitely established.

Medicoliterary Notes

A recent novel dealing with many of the aspects of medicine and medical history is Knud Stouman's *L. Baxter, Medicus,* published by the Greystone Press. The book is a first novel and as such deserves praise, although it leaves something to be desired in its characterizations and plot conception. The medical part of the book deals with early Dutch, British and American medical practice.

* * *

The Doctors Mayo, by H. B. Clapesattle, is attracting the attention it deserves as a vivid portrayal of life on the American frontier as seen by a doctor. The book is really a history of American medical practice and growth through one hundred years of struggle and development. The volume is published by the University of Minnesota Press.

* * *

Science Service of Washington, D. C., is completing for Duell, Sloane and Pearce a book entitled *Chemicals That Cure,* by Watson Davis, director, and Jane Stafford, medical staff writer, of Science Service. The volume will be published next spring. It will set forth in nontechnical language and style the revolutionary advances in chemotherapy ushered in recently by the discovery of the socalled "sulfa" drugs.

* * *

The October death rate in New York State was the lowest ever recorded for that month, according to a recent report made by Dr. J. V. De Porte, director of the Division of Vital Statistics of the Department of Health. The rate was 10.2 deaths per 1,000 population. Dr. De Porte also said that the birth rate of 151.1 equalled the nine year high for October. Infant mortality, with a rate of thirty-five deaths under one year for every one thousand live births, has never been lower. Mortality from the chief diseases of childhood was exceptionally low, although deaths from infantile paralysis numbered eleven, as compared with two last year. New minimum rates for the month were established by deaths from influenza, tuberculosis and appendicitis. The pneumonia rate was lower than that of a year ago, but higher than that for 1939.

* * *

No. 1 Saboteur of Our Defense: Plain Words About Venereal Disease, is the title of the new book by Thomas Parran and R. A. Vonderlehr, a publication of Reynal and Hitchcock. The authors conclude their volume with the following call to action: "This is the time for aggressive action. . . . We need a streamlined, mechanized, high-speed effort to insure our safety as a nation. . . . We must win the war by whatever degree of participation may be necessary. But we must get the sand of venereal disease out of the gears. . . . In time it destroys valuable human machinery, irreplaceable at this point. There is no single contribution which will mean more in terms of man power now and relief from economic burdens later. If we have not the capacity to do this small fraction of the whole task, and do it well, how can we hope for success on the far-flung ultimate issues. We must do each essential job as it appears if we are to win the war. We must give human needs priority if we are to win the peace."

* * *

"The Red Cross is almost unknown in America. Not one person in a hundred has ever heard of it; not one in five hundred has a clear idea of its purpose." Thus wrote Clara Barton in 1877 to a fellow member of the now world famous organization founded by her. The story of Clara Barton's eventful life, and of her work and the important part she and her then newly founded Red Cross have played in the history of American medicine and American welfare, as well as that of other countries, is fascinatingly told by Blanche Colton Williams in her biography entitled *Clara Barton, Daughter of Destiny,* a publication of the J. B. Lippincott Company. The story is told from the time when little Clara, at the age of eleven, started out as a nurse for her sick brother, through the subsequent history of the organization founded by her and which now operates in every country of the globe.

* * *

The Year Book Publishers, of Chicago, have announced the publication of two volumes of value to the physician. These are *Treatment of the Patient Past Fifty,* by Ernst P. Boas, of Columbia University, and *Sulfanilamide and Related Compounds,* by Wesley W. Spink, of the University of Minnesota. The first volume is announced as a practical guide for aid in stemming the rising tide of disability due to chronic disease among the aging. Features of the text are signs and symptoms of disease and their interpretation; how to readjust ordinary treatment procedures to best preserve the patient's health and morale; and discussion of specific geriatric treatment for a number of disease conditions, with emphasis upon choice of medication, methods of administration, supportive treatment, diet problems, and operative conditions. The volume treating of the sulfanilamide compounds covers all the compounds now on the market, discusses proved methods of administration, and lists all diseases, and all branches of medicine and surgery to which these drugs are considered applicable. Check lists and tables direct choice of drugs for a number of infectious conditions.

MEDICAL RECORD

INCORPORATING THE

New York Medical Journal, Philadelphia Medical Journal Medical Record, Medical News, Medical Herald Kansas City Medical Index-Lancet, Medical Fortnightly, St. Louis Clinique, General Practitioner, Laboratory News

Published on the first and third Wednesday of each month by THE MEDICAL JOURNAL AND RECORD PUB. CO., INC.

GREGORY STRAGNELL, M.D. - - - - - *Editor*
A. M. MARLATT - - - - - *Assistant Editor*
N. F. HANF - - - - - - *Business Manager*
C. A. MCHALE - - - *Advertising Manager*

Subscription Price: Under Domestic Postage, $4; Foreign Postage, $5.50; Single Copies, 25 cents.

Remittances should be made by New York Exchange, post office, or express money order, payable to The Medical Journal and Record Publishing Company, Inc., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

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We would appreciate any items of current interest which our readers may send in.

WEDNESDAY, JANUARY 7, 1942

Medicolegal Notes

Expert Testimony As To Effect of Bullet Wound

In a second degree murder prosecution a medical examiner, who had performed an autopsy and knew from actual observation what parts of the brain had been lacerated by the bullet, in what direction and where the blood caused by the wound had flowed, and where in the body it had been deposited, was held competent to testify as to the manner in which the deceased would drop when shot, and where the blood from the bullet wound would be deposited. His testimony as to the amount of blood that would be released by the wound and the rate of its escape was also held competent. This evidence was held not subject to objection as relating to matters which are not the subject of expert testimony, since it "related to matters outside the range of common experience and pertained to an exact knowledge of the anatomy and the vital organs of a human body and the course of projectiles through it."

The medical examiner's testimony was to the effect "that the bullet had destroyed a large part of the motor tract and that the immediate effect upon the victim was an instant collapse; inability to walk or move or stand, which would be followed by a flaccid collapse and then a flaccid paralysis, which would continue until death; that anything that he held in his hand would drop." This was held as bearing on the defense's allegation that deceased had a knife in his hand which was later found at a distance from the victim. Commonwealth vs. Capalbo, Mass. Supreme Court, 32 N. E. 2d. 225.

Res Ipsa Loquitur Doctrine in Malpractice Cases

In an action for malpractice, alleging failure to place fractured bones in their natural position, it was held that the doctrine of res ipsa loquitur did not apply to such a case, so that a general allegation of negligence and injury was not enough to state a cause of action. Defendant was held to be entitled to specific allegations of negligence and to be apprized of the nature of the negligence of which the plaintiff claimed he was guilty.

Applying various definitions of the doctrine, the court considered it might take judicial notice that injuries of the nature here involved were not such as would necessarily or reasonably be a result of negligence. "In fact," the court continued, "the rule of res ipsa loquitur is seldom applied to cases of malpractice of physicians or surgeons. No physician can be a guarantor of results. The physical condition of the patient, the nature of the injury—many things over which the physician has no control—may enter into the case and affect the result; and this is especially true of an injury to the hip. To hold, therefore, that the mere general allegation contained in count 2 would be sufficient pleading in this case would, we think, place a greater burden on the defendant than he should be required to bear." Gebhardt vs. McQuillen, Iowa Supreme Court, 297 N. W. 301.

Hospital's Lien For Services

Where an infant recovered a judgment for personal injuries and its father also recovered a judgment, limited, however, to the amount of the hospital bill for services to the infant, the hospital's lien for its services was on the father's recovery only. The infant could not recover for medical expenses under the circumstances, and no lien based thereon could attach to the infant's recovery. The hospital's lien was held subject to the attorney's lien for the legal expenses of the recovery by the father and was limited to reasonable charges at cost rates. Abbondola vs. Kawechi, New York Supreme Court, Kings County, 29 N. Y. 2d. 530.

Filing of Hospital Lien for Services

The New York Appellate Division, Melichar vs. Michelson, 9 N. Y. S. 1016, holds that a hospital which filed a preliminary notice of lien for the care of an injured person under section 189 of the Lien Law but did not file an additional notice of lien showing the total hospital charges which have accrued until seven days after the patient's discharge, instead of within five days as required by the statute, was not entitled to a lien on the amount received by the patient in settlement of his action. Two judges dissented on the ground that a substantial compliance with the provisions of the statute should be sufficient for the validity of the lien.